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THE PAPER TRADE JOURNAL.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIII.—NO. 20. NEW YORK, MAY 19, 1894. WHOLE NUMBER 1046.

Trade Topics.

Pulverized Fuel.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By W. H. Weston.

As by far the greatest part of the coal which is used for steam making is bituminous, the question of utilizing it in the best and most economical way is of vital importance and worthy of most careful and extended experiment, provided there is any indication that in any certain line or method there may be advantages to be gained. The common method of using coal in a boiler furnace is the old method—that is, one of a hundred years ago—with practically no improvement in the combustion secured, the way of firing the coal to the furnace, or in the amount of heat units contained in the fuel which are brought to actual use in making steam. It is evident that in the ordinary forms of boiler furnace and connections from 40 to 50 per cent. of the heat units of the fuel are entirely lost by going up the chimney to waste, by reason of the excessive volume of air admitted to the furnace and by incomplete combustion, &c.

At common steam pressures this loss cannot be reduced below about 15 per cent. by the most perfect conditions; but this limit may be approached much nearer than at present by improvements of equipment and the introduction of more complete and effective methods in the furnace and the combustion chamber. Most of the experiments in fuel burning have been to prevent smoke and have amounted to absolutely nothing in practical use. About the same ground has been gone over time and again by various persons, and the results have been of no account, either in the way of preventing smoke or securing a higher economy in the use of the fuel. The amount of coal used for power purposes is immense and well up in the hundreds of millions of dollars every year, and the quantity consumed is fast increasing each year. The time has therefore come when its use should be more economical by reducing the amount which is thrown away. Taking the example of marine or locomotive power, where the coal supply has to be carried for long distances at an expense, the reduction of the amount which must be transported at the expense of power used, simply to be thrown away as lost heat units from the stacks, will be an advantage, especially on railway work.

From the nature of bituminous coal the greater part of it is finely broken and in dust, thus making a substance well adapted to very incomplete combustion in the usual modes of firing it. Soft coal will never be anything else than crumbly and fine and hard to fire by the common methods, and produce economical results. The coal is broken up and fine when it leaves the mines, and the successive handlings which it undergoes before it is delivered by boat and cars break it up all the more, so that by the time a lot of soft coal has reached a boiler room it is invariably in such a state as to be almost entirely fine and free from lump coal in any considerable quantity.

In firing such coal on a common grate it will always cake up and leave some parts of the grate covered by a mass which is impenetrable by the air supply, and other parts of the fire will be burned through in holes, so that the air rushes through to a disadvantage. Opening the fire doors to break up the fire, level it over, and close up these openings, if done very often, is a serious cause of loss. Another very serious loss in using such fine coal fired in this way is that every time it is shoveled into the furnace the finest part of the coal, or the comparatively light dust which forms a large part of it, is swept through the furnace and combustion chamber and up the chimney by the strong inrush of air, and is entirely unconsumed. Every particle of substance which goes through a furnace without being consumed, so as to deliver up its heat, will not only be a loss in itself, but carries away heat from the fuel which has been consumed—heat which might otherwise have been absorbed by the heating surfaces of the boiler and the water. This loss from the finest part of the coal going off up the stack or chimney is much more serious and amounts to a great deal more than is usually supposed. The rolling away of the dense black volumes of smoke from chimneys and from the stacks of locomotives is the result of the incomplete combustion of the finest part of the fuel, and the imperfect union of its gases and the air of the draught. The cost of handling soft coal at the furnace is high, on account of the amount of hard labor that is needed to keep the fire clear and at any approach to a fair condition.

(To be continued.)

Partnership Real Estate.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

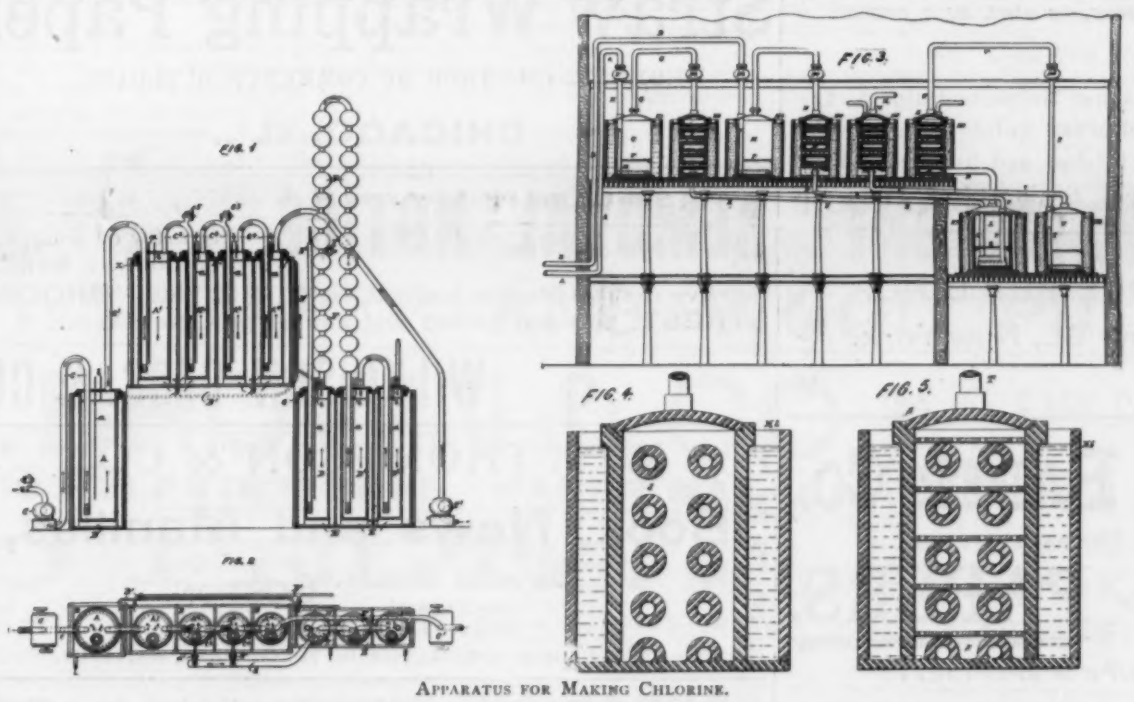
The principle that at law real estate owned by a partnership is held subject in all respects to the ordinary incidents of land and held in common is universally admitted; though belonging to partners and employed in the partnership business, the title standing in their joint names, it is deemed to be held by them as tenants in common or joint tenants for all purposes.

In equity, however, it is competent to the partners, by agreement, express or implied, to affect real estate with a trust as partnership property, and thereby to render it, in equity, subject to the rules applicable to partnership property, as between the partners themselves and all claiming through them. The ground of this appears to be a special interference of equity in favor of commerce, whereby the trust is separated from the legal estate, and the latter being left to pass according to the nature of real property, the trust estate is made subject to the rules of partnership personal property so far as concerns the interest of the partners in relation to one another and to those who are in privity with them. The legal title, however, is affected in equity only to the extent of changing joint tenancy into tenancy in common, which is nothing more than a destruction of the incident of survivorship.

The basis of this equitable lien or trust is the agreement and intention of the parties. It is not produced by a superior equity in any class of third persons, but is exclusively an equity between the partners, resulting from their relation of co-partnership, and administered in favor of the partners themselves, and such third persons as equity subrogates to the rights of one partner against the other, and against such persons only as are considered as standing in the place of the one against whom it exists, as his heirs, widow and perhaps individual creditors. Real estate purchased out of partnership funds, to be used and applied to partnership purposes, and considered and treated by the partners as part of the partnership stock, is to be deemed, as far as the legal title is in question, as estate held in common and not in joint tenancy; but as to the beneficial interest, it is held in trust, each holding his property in trust for the partnership, until the partnership account is settled and the partnership debts are paid. It is a trust arising from the actual or implied agreement of the partners, and the mutual relation in which they stand to each other.

If land is bought with partnership funds, and is brought into the business of the firm and used for its purposes, it will be considered as partnership stock without regard to in whose name the legal title may be vested, unless there is distinct evidence of an intention to hold it separately, such as an express agreement in the articles of copartnership, or at the time of the purchase, or the fact that the price is charged to the partners respectively in their several accounts with the firm; for such arrangements would operate as a division and distribution of so much of the funds, and each would take his share divested of any implied trust; but the mere circumstance that the conveyance was to them expressly "as tenants in common" would not of itself be sufficient to rebut the trust, and there is no difference between a purchase from a third person and a purchase from a partner. If the partnership funds are advanced to one of the partners for lands on which to carry on the business, or which is the same thing, if he gets credit on the books of the firm for the land, intending to vest it in the business, it thereby becomes, in equity, the property of the partnership, though he may retain the legal property in himself; but it seems that neither one of these circumstances alone, namely, the lands being purchased with partnership funds, nor its being used in and for the partnership business, will conclusively render it partnership stock. The fact that the purchase is out of partnership funds is not a decisive circumstance. One partner may withdraw with the knowledge and consent of the others a portion of the partnership funds for a separate purchase on his own account, and all may join in a purchase of real estate for purposes wholly independent of the partnership, intending to hold their shares severally on their individual account. Under such circumstances the fact that the payment is made from partnership funds will not change the nature and operation of the purchase; and the single fact that the purchase is made with partnership funds, will not, when the purchase is unconnected with the business of the firm, be sufficient to convert it into partnership stock without some further evidence of an agreement, express or implied, to that effect.

As to the other point, whether the appropriation of land to the uses of the partnership without its being purchased with partnership funds will operate to render it partnership property, it was held that it could not, on the ground that a resulting trust arises without writing only where at the time of the purchase money is advanced by another; but this equitable doctrine in fact does not proceed so much upon the principle of a resulting trust as on that of an equitable lien created by an agreement on sufficient consideration; and the difficulty in the case does not arise from the failure of the equity, because the transaction may be regarded as an increase to that extent of the contribution to the stock in trade, but the difficulty is as to the evidence and extent of the parties' intention. It seems to be settled that the mere fact that property held by members of the firm as tenants in common is used in and for the partnership business, or a mere agreement to use it for partnership purposes, is not of itself sufficient to convert it into partnership stock; there must be strong evidence of further agreement to make it partnership property.



Apparatus for Making Chlorine.

Process of Making Chlorine.

The accompanying illustrations show the designs of apparatus intended for the economical production of chlorine from hydrochloric acid by means of nitric acid. In carrying out the process hydrochloric acid gas, obtained either directly from the salt cake furnace, from aqueous hydrochloric acid or from any other suitable source, is dried by passing it in contact with sulphuric acid in a tower or other suitable apparatus, and the dried gas is passed through or in contact with a mixture of strong nitric and sulphuric acids, in a suitable vessel or apparatus known as the decomposer. The hydrochloric and nitric acids suffer mutual decomposition, the reaction yielding chlorine, lower nitrogen oxid or oxids, and water, which last is absorbed by the sulphuric acid. The relative quantities of the nitric and sulphuric acids must be proportioned to suit the parts each has to perform, the nitric acid having to effect the decomposition of the hydrochloric acid, and the sulphuric acid having to take up the water formed during the reaction, which may be represented by the following equation: $2HCl+2HNO_3+2H_2SO_4=Cl_2+N_2O_4+2(H_2SO_4+H_2O)$.

The vessel containing the nitric and sulphuric acids ought to be kept at a temperature of about 0° C., and the temperatures of the entering hydrochloric acid gas and of the gases leaving the vessel should not exceed 30° C. The gaseous mixture resulting from the operation is next passed into a vessel termed the first absorber, containing dilute nitric acid, which absorbs nearly the whole of the nitrogen oxid or oxids, and unaltered hydrochloric acid, if there is any. The unabsorbed gases are passed onward through a second vessel or absorber containing dilute nitric acid; and finally any remaining traces of nitrogen oxid or oxids are separated from the chlorine by passing the gas through a scrubber containing sulphuric acid.

The sulphuric acid used in the scrubber may be subsequently used in the decomposer.

The nitric acid used in the absorbers may, when sufficiently charged with nitrogen oxid or oxids, be run into suitable vessels or apparatus, in which it is heated and has air passed through it, with the effect that the lower oxid or oxids of nitrogen are reconverted into nitric acid, capable of being used over again in the decomposer.

The sulphuric acid which becomes diluted in the decomposer may be reconcentrated in the ordinary way, or it may be used to decompose fresh quantities of common salt.

Figure 1 is a sectional elevation and Fig. 2 a plan of the apparatus above referred to.

A, A', A^2, A^3, A^4, are a series of closed cylindrical stoneware vessels, each resting in a tank, B, through which a continuous flow of refrigerated water or brine entering at *x* is kept up by means of the pipes B'. Each vessel contains two thermometers, *a*, *b*, the former being for the purpose of indicating the temperatures of the contained liquids, and the other for indicating the temperatures of the issuing gases. The hydrochloric acid gas is forced under pressure of a blower, C, into the drying vessel A, containing the charge of sulphuric acid, the supply pipe *c* being carried nearly to the bottom of the vessel and being perforated there for the escape of the gas. The dried gas then passes through the pipe *c'* to the vessel A', which contains the decomposing mixture of nitric and sulphuric acids, thence in succession through the pipes c^2, c^3 and absorbers A^2 and A^3 containing dilute nitric acid, and lastly through the pipe c^3 to the scrubber A^4 containing sulphuric acid. From this scrubber the gas is drawn off by a second blower, C'.

D, D' and D_2 are a second series of vessels similar to the vessels A, A', A^2, each resting in a tank E. The vessel D is kept heated by hot water entering by the pipe *e* or by other means, but the other two are cooled by the overflow of refrigerated water or brine from the tanks B. Each vessel D is supplied with two thermometers, *a*, *b*, for the purposes of ascertaining the temperatures of the contained liquids and the gases This second series of vessels D, D', D^2 is for the purpose of converting the lower oxids of nitrogen collected by absorption in the vessels A^2, A^3 into nitric acid. For this purpose the latter vessels are connected with the vessel D by means of a pipe, *d* (Fig. 2), so that the liquid in A^2, A^3 will flow naturally thereinto when the cocks *d* are opened. Before allowing the liquid to flow into the vessel D from A^2, A^3 water may be introduced into the vessels A^2, A^3 through the pipes c^2 c^3, which are provided with stopcocks c^3 for the purpose. When in the vessel D the mixture of acid and oxids is heated and a slow current of air passed into the compound through the pipes E', whereby the lower oxids of nitrogen are oxidized into nitric acid. The air passes from the vessel D through a tower F, carrying with it free oxids of nitrogen and these during their progress undergo further oxidation, the necessary water being supplied through a cock, F'. The condensed gases flow back into the vessel D and those uncondensed pass into the vessel D', charged with nitric acid, in which the uncondensed gases are absorbed. The air and nitrogen issuing from the vessel D' are scrubbed in the

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vessel D^2 containing sulphuric acid which frees them from all traces of oxids of nitrogen.

If sulphuric acid is used in the vessels A^2 A^3 instead of nitric acid, the nitro-sulphuric acid or nitro-compound formed may be run direct into the vessel D, which is then kept cool, and water or dilute sulphuric acid injected into it, care being taken that the temperature is not allowed to rise.

A modification of the process as above described is carried out in the apparatus, of which Fig. 3 represents a longitudinal vertical section; Fig. 4, a vertical section of the vessel J, at right angles to the section taken in Fig. 3, and drawn to a larger scale; and Fig. 5 is a similar enlarged section of the vessel S.

The apparatus for generating and drying the hydrochloric acid gas is not shown, but the two streams of gas are led from the apparatus through two pipes, A B. One stream of hydrochloric acid gas is led by a pipe, A, through a vessel, C, known as the decomposer, in which it is subjected to the combined action of strong nitric and sulphuric acids. The hydrochloric acid gas is by a pressure blower, D', forced to the bottom of the decomposer, C, the inlet pipe, E, extending to the bottom and terminating in a perforated coil, and the gas, which is further subdivided and distributed by passing through a perforated diaphragm, F, rises through the mixture of acids. In the decomposer C there are formed water, which is retained by the sulphuric acid, and a gaseous mixture of chlorine and nitric peroxid, which gases pass from the top of the vessel by a pipe, G.

The contents of the decomposer C are kept at a low temperature by means of cold water, or by preference brine of a temperature at or a little below the freezing point of water, the brine being made to circulate in a tank, H', in which the decomposer C is placed. The other vessels employed in the modification of the process are kept at a low temperature by being placed in similar tanks, H^2, &c., similarly supplied with a cooling agent. From the decomposer C the mixture of chlorine and nitric peroxid is, by a pressure blower, D^2, made to pass down through a vessel, J, in which it is further cooled by brine or other suitable liquid, which passes through pipes crossing the vessel as well as circulating round it. From the cooling vessel J the mixture of gases passes on through a pipe, K, to a vessel, L, hereinafter termed an absorber.

The second stream of hydrochloric acid gas entering by a pipe, B, may pass directly into the absorber L; it is, however, for a purpose hereinafter explained, by preference made by pressure blowers, D^3, D^4, to pass through vessels, M, N, which are like the decomposer C and cooler J, hereinbefore referred to, but which may at present be regarded as merely serving to cool the gas. From the vessel N the hydrochloric acid gas passes by the pipe P into the absorber L, in which both inlet pipes, K, P, extend to the lower part where they terminate in perforated coils under a perforated diaphragm, Q. In the absorber L there is put a quantity of nitric acid and water, which absorbs the nitric peroxid, nitric acid and nitrous acid remaining, while the chlorine passes on in a nearly pure state.

In order to further purify the chlorine it is led from the absorber, L, by a pipe, R, into a vessel, S, in which it passes up through a series of perforated plates and encounters nitric acid, which is supplied at the top and passes downward. The perforated plates rest upon the cross tubes in the vessel S, through which tubes the cooling liquid circulates. Instead of the plates being simply perforated they may have short tubes projecting upward and covered with inverted cups, as in apparatus for distilling or rectifying alcohol or ammonia; or any other suitable known scrubbing apparatus for bringing gases into close contact with liquids may be used. On leaving what may be termed the nitric acid scrubber S the chlorine is conveyed by a pipe, T, and by means of a pressure blower, D^5, down to the bottom of a vessel, U, containing sulphuric acid, up through which the chlorine passes in small streams or bubbles. The chlorine is next led from the vessel U by a pipe, V, to a scrubbing vessel, W, in which it is subjected to a final scrubbing action with sulphuric acid, this vessel being like the nitric acid scrubber S. The purified chlorine is led from the sulphuric acid scrubber W by a pipe, X, to lime chambers or other apparatus in which it is to be applied.

When the mixture of nitric and sulphuric acids employed in the decomposer C has become weakened or nearly exhausted, a fresh strong mixture of the acids is put into the vessel M, which then becomes a decomposer for operating on the hydrochloric acid gas supplied by the pipe B. A stream of hydrochloric acid gas continues to pass by the pipe A, but it now forms what may be distinguished as the second stream, and is acted on in the decomposer C only to the extent of utilizing, as far as conveniently possible, the remaining effective acids in that vessel, a large portion of the gas passing on unaltered to the absorber L. The actions in the vessels C and M are thus alternated and the acids employed are in consequence more completely utilized.

The nitrous acid formed in the absorber L may be oxidized into nitric acid in any well known manner by means of air or otherwise, either in separate apparatus or by admitting air along with the hydrochloric acid gas or along with the mixture of chlorine and nitric peroxid at any convenient part of the apparatus. When this last mentioned mode of reoxidizing the nitrous acid is adopted it will be advantageous to heat the gases passing through the vessels J, N and L, instead of cooling them, the other vessels, W, U and S, being however, kept cool. The action will take place at various temperatures, but a temperature of about 30° C will be found satisfactory in practice.

The various pipes and vessels are made of or lined with lead or other suitable material not easily or rapidly acted on by the acids or gases passing through them.

Correspondence.

Miami Valley

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio May 19, 1894.

"We are scratching for every order we get" is not presumed to be a stereotyped response to an inquiry concerning the condition of business among the paper manufacturers in this valley; but if the forcible reply has been hurled at your correspondent once it certainly has been repeated times innumerable. An analysis of the foregoing sentence is sufficient to underline the true condition of the trade in this section. It seems that no comment is necessary. The rather indefinite conclusion that trade might be better and could be worse is naturally evolved.

The opinion that straw paper is exceptionally low in price is not confined to any particular section of the great producing industry. There is apparently a ready market, which is given an impetus probably by reason of the downward tendency of prices. And there's express paper! Can anything more favorable be said of that? Ask of the man in the moon. Panic prices come in panicky times. Dealers will begin to advertise slaughter sales after a while, just as the clothing merchant makes an astounding sacrifice.

The past week has developed a few changes in the midst of the American Strawboard Company's mills. The extensive Lima mill has been started after an extended shut down caused by a fire there last fall. This mill has been completely rebuilt and is a handsome manufacturing structure, indicative of the thrift and prosperity of that bustling city. New machinery has been added, and altogether a very complete equipment is the result. Nearly 100 employees, who have been idle during the compulsory suspension will be given work, and it is expected that operations with a full force will continue with increasing prospects.

Of this corporation's Ohio mills those at New Portage, Tippecanoe City and Tiffin are closed down, partly through the slack condition of business and partly for other reasons. The mill at the last named place will soon start up again with a full force.

In Dayton several valuable and important changes and improvements have been made in the company's plant. A new rotary boiler has been added and several other additions in machinery and buildings made. At present only one machine is in operation, although in the near futurity the plant in its entirety will be under full headway.

Affairs at the Seybold Machine Works in this city are moving along at a gratifying gait. This company's "Columbian" folder is meeting with success, while its latest knife grinder is an invention embodying new ideas. The folder is a paragon of simplicity, doing away with complicated and troublesome mechanism. Printing houses and paper and tablet concerns are responding liberally, and orders now coming in are of the most substantial kind.

Treasurer Stokes, of the York Haven Paper Company, York Haven, Pa., was in the city the past week.

George W. Johnson, with Diem & Wing, Cincinnati, has called on the trade.

Charles Whealen, district manager of the American Strawboard Company, looked after affairs at Piqua and Lima this week.

George G. Shaw, of the Dayton Paper Novelty Company, who accompanied the Pelee Fishing Club to Put-in-Bay for an outing, and who was one of those arrested for fishing in Canadian waters, writes an interesting letter to his friends here, giving an account of their experience.

Mr. Shaw was on the Visitor when this tug and another American vessel, the Le Roy Brooks, were captured by the British man-of-war, Petrel. The arrest of the Dayton party, including several paper manufacturers, was considered an outrage actuated by the revengeful spirit of the collector of customs. It is useless to add that the excitement on the island was no greater than the indignation in Dayton, where devoted wives found anguish in the thought that the derelict Izaak Walton husbands were immured in Canadian dungeons awaiting trial and possibly punishment without even a fighting chance. All were released on bond and the outing proved exciting and invigorating.

A small fire at the Smith-Vaile shops (east section of the Stilwell-Bierce-Smith-Vaile concern) caused some damage in the cupola. Luckily the blaze was squelched before it spread.

The Aull Brothers Paper Company has placed on the market a novel little machine which is destined to gain widespread popularity. This machine is simple in construction and is known as a paper tester. Many of the paper mills in this valley have already been supplied and would not consider the mill equipment complete without one. In this case the machine seems to be a necessary luxury. If a magnificent sale depends upon the indomitable energy of J. W., W. J. and F. N.—then it is a certainty.

The large shipment of display rolls and cutters of the Western Paper Company was sent to Antwerp this week via the Red Star line. Two cars were necessary to make the shipment to New York from whence the route to the international fair was direct. In the main this display will be identical with that at the World's Fair, and, if anything, may be more complete. An advantageous location has been secured, and inasmuch as Commissioner Bebee, of this city, will give the exhibit personal supervision for the time being, it will be among the first open to inspection. Later on Mr.

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SULPHITE AND SODA PULPS. SEND FOR SAMPLES AND PRICES

Weston expects to go abroad, and will bestow personal attention on the display. A recent innovation was inaugurated by this company in the manufacture of colored cutters, and with the vari-colored paper the display will be pleasingly artistic. America's national colors and the red-black yellow of Belgium will mingle with a delectable resplendence.

The Weston Company removed its extensive plant this week from its old quarters on Main street, near Second, to the large building at the corner of Clinton and Bacon streets in the east end, contiguous to the Crume & Sefton Manufacturing Company. This is the structure lately vacated by the W.W.White Paper Company, which has constructed more commodious mills at Browntown. Mr. Weston occupied four floors and a basement at the former location, but has been desirous of removing for some time owing to the cramped quarters. Although the new place is only three stories high the stately width and spaciousness of the building make up for the deficiencies of the old place. The plant will be improved and enlarged as more machinery will be added.

Maurice Nixon has been through the West for the Nixon Paper Company during the past few weeks, and has also been in the South. He discovered a general prostration in the latter territory.

C. B. Oglesby, the well-known paper manufacturer, and wife, tendered Paul J. Sorg, the congressman-elect, and wife, a pleasant reception the other afternoon at Middletown. A number of paper manufacturers of prominence were in attendance.

The Hooven & Allison Cordage Works at Xenia are running at full capacity, likewise the mills at Miamisburg.

The Piqua Felt Company is receiving a goodly share of the orders so hard to secure at this uncertain time. Not a complaint is heard therefrom.

During the past week several accidents have been noted in the valley, among which are the following:

W. G. Hooper, superintendent of the Gardner-Tytus mills, at Middletown, stepped into an open manhole at the mill and sustained a painful fracture of the left knee.

C. H. Jones while at work at the Harding Paper Company's mill at Franklin fell through an opening in the floor and was injured about the arms, legs and head, disabling him.

Wm. Weiser, employed at the Louis Snider's Sons' Company's mills, had the third and fourth fingers of his right hand caught in the calenders and badly mashed.

James Bush (colored), while unloading baled rags from a car at the Tytus Gardner mills, fell headlong through an open doorway and struck his head on the ground beneath. He was rendered unconscious, and it is stated that only for the solidity of Bush's occiput the accident would have resulted fatally. However, the injury is limited to a severe contusion.

Owing to the poor market, the pulp mills of the Snider Company at Hamilton have been shut down temporarily by trustee Boyd. A number of employees are thus thrown out of work.

Once again were the paper mills of the United Paper Company, at Amanda, offered for sale on Saturday afternoon at the Court House in Hamilton. Not a single bid was made, and in consequence there was no sale. The slow market has had a telling effect so far as the disposition of this plant is concerned.

One of the Holdeman Paper Company's mills at Lockland was almost completely destroyed by fire on Saturday afternoon, the 12th inst. It is not known what caused the blaze, although it is thought to have been spontaneous combustion. Nearly the entire plant, which was constructed of the best material, was razed to the ground by the fiercest and most disastrous fire known in the history of Lockland. The fire departments from Wyoming, Reading, Hartwell and Carthage responded to calls, and were enabled to save the machine room. The loss carefully estimated is as follows: On buildings, $10,000; boilers, engines and pumps, $13,000. and machinery, $12,000; total, $35,000, with not more than $5,000 insurance.

The structure was a famous landmark, having been erected seventy years ago by John Burnett, and used as a hominy mill. Valuable additions were made by Bachelor, De Camp & Co. in 1860, and in 1863 the property was purchased by De Camp, Haldeman & Co. The present owners became the possessors of the plant in 1868.

The blaze was attended by many exciting incidents, including several explosions in the boiler and chemical houses. Several firemen were burned and bruised, but none seriously.

M. V.

Western New York.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., May 16, 1894.

Just think of it! 250 people on the pay roll is the record of the Niagara Falls Paper Company this week. Mayhap this week may be a little exception to the rule, but the statement suffices to show that this is one of the largest mills in the country, and that its influence is felt in the community in which it is located. The mill is equipped with one of the best working forces to be found in the country. Then add to this one of the best mechanical equipments in the world, and you can readily see that the Niagara Falls Paper Company's plant is as near perfect as can be.

Manager Morgan is not satisfied with this reputation. He continually strives to reach a higher ideal. Recently he has added a filter plant to the mill, which has all been piped, and will be ready to start up next week. The system is from the Moore Filter Company, of Holyoke, Mass. The Niagara Falls Paper Company has put in four large tanks, each 12x12 feet in size, which will have a combined capacity of 2,500,000 gallons a day. The filter plant is supplied with two 10 inch Lawrence centrifugal pumps. This improvement cost the company about $5,000.

Some additions to the machinery have been made lately. A new "Success" screen, made by the Friction Pulley Company, of Sandy Hill, N. Y., has been placed in the screen room. It has a capacity of 5 tons a day.

An order has been placed with the Rice, Barton & Fales Machine and Iron Company, of Worcester, Mass., for two drum winders for the two Fourdrinier machines. It is understood that the company is considering the advisability of adding another big paper machine to the mill. The foundations are laid and everything is in readiness for one.

The Horne engines and the extra Jordan engine put in by the J. H. Horne & Sons Company, of Lawrence, Mass., have been in operation now for some two weeks, and meet the requirements of the mill in every particular.

The Riordon Paper Mills Company, at Merritton, Ont., is reaching out, and proposes to increase its plant. It is stated that it is negotiating for the Sylvester Cotton Mill, on the Welland Canal, and will turn it into a paper mill if the property is secured.

I am informed that Robert Hall, the new superintendent at the Riordon Paper Mills, Merritton, Ont., did not come direct from England, as stated in my last letter, but was for upward of two years with the Ticonderoga Pulp and Paper Company. Prior to that time he was in an English mill.

W. E. T.

Fox River Valley.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., May 15 1894.

Fox River valley paper manufacturers are somewhat exercised over the charge made in a certain trade journal lately that Wisconsin mills were responsible for the present demoralization of prices. "I wish you would deny that charge with all the strength at your command," said one of the largest manufacturers in the valley to your correspondent to-day. "The truth of the matter is," he continued, "that the price cutting has all started in the East. The representatives of Eastern mills come out here and they simply haven't got any prices! We are unhappy enough with the present condition of things as it is, but we especially do not relish the idea of having the blame of it laid at our doors."

Another drowning accident occurred in this valley on Thursday last. August Minnkovinski fell from a railway side track trestle crossing the water power canal of the Manufacturing Investment Company, of Appleton, and being unable to swim was drowned. He was employed by the Investment Company and was in the habit of crossing the trestle as a short cut. Some freight cars were standing on the track, and in picking his way along the side of them he missed his footing and went off the trestle. The body was recovered shortly after. The deceased leaves a wife and two children. He had been in Appleton only a few months, coming from Chicago, and was sober and industrious, and had just purchased a little home near the mill.

The body of paper maker Hutton, of Menasha, who was drowned in Lake Winnebago, has not yet been recovered. The latest reason given to account for it, which may or may not be true, is that he had $800 on his person, and that the body has been found, robbed and secreted. The employees of the Gilbert Paper Company displayed their sympathy for the wife and children of their fellow workman, William Windgrove, who was drowned at the same time, by making up a purse of $150 for them. The company bore the expenses of the funeral.

The plans for the new paper mill of the Falls Manufacturing Company, of Oconto Falls, were completed to-day by Architect C. B. Pride. The buildings will all be one story and basement. The basement walls and the foundation for all the heavy machinery will be of solid stone. The superstructure will be of wood. The engine room will be 97x36 feet, for three engines, with room for a fourth engine if needed. The machine room will be 157x36 feet, for one 108 inch machine. The finishing room will be 42x100 feet. The disposition of the buildings is such that if it is desired in future to add another machine, room for it can be secured by building one additional wall and the necessary roofing. The water power will be taken in through the basement of the engine building. Iron draft tubes and cases with horizontal wheels will be used throughout. About 75 men are now engaged in the work of excavating and the contracts for the buildings will be let at once. The boiler house will be 42x54 feet for three 100 horse power boilers. There will be a round brick smoke stack 125 feet high, with 66 inch flue.

At the plant of the Wolf River Paper and Fibre Company at Shawano all of the foundations for the building and machinery will rest upon piles. The piles are now being driven and the frame of the building erected.

It is probable that before long two of the four machines of the Combined Locks Paper Company will be changed from the making of news print to some higher grade of paper. Five of the eight steam boilers at this mill are being reset. The new sulphite plant is also being hurried forward to completion. The lining of one of the digesters has been finished, the Wagg lining being used.

The Kimberly & Clark Company lately imported a new machine for its sulphite plant at Kimberly. It is called a Kollergang and is used for reducing the stock after it comes from the digesters and before it goes to the engines. The Kollergang is used in mills in the old country, but is a new thing in America. It was procured upon the recommendation of Superintendent Scott, who is familiar with all old country usages.

A new roof is being put on the Ravine mill of the Fox River Paper Company.

Work is going on constantly at the new plant of the Nekoosa Paper Company, on the Wisconsin River, but is not being hurried, as the times do not warrant any special exertions to get in operation. The water in the river has fallen sufficiently to enable work to be resumed upon the dam.

The railroad extension to Long Tail Point, where the Pulp Wood Supply Company's docks and boom are to be located, is nearly completed. The hoisting machinery for loading the wood on cars has been shipped there, and it is expected that the docks will be ready for work about June 1.

A movement is on foot at Kaukauna, which will come up at the next council meeting, to provide a system of water works for the city, something which is greatly needed. A new iron viaduct is just being completed across the river at Kaukauna, and a fine large modern hotel is being constructed.

The pestiferous little flies called millers, which appear for a week or two every year at about this time, have arrived, and paper makers have been busy screening all the doors and windows of the mills to keep them out. They have a way of getting between the sheets coming from the cutters and spoiling them.

The Thilmany Pulp and Paper Company, of Kaukauna, made a success last St. Patrick's day in supplying newspapers with paper decorated with green shamrocks. It is now filling orders for Memorial Day paper decorated with blue stars.

The smallpox situation at Menasha continually grows more serious. There have so far been eight deaths, and new cases are almost daily reported in spite of all measures being taken to control the disease.

F. Agge, of Portland, Me., representing the Cumberland Manufacturing Company, of Boston, is spending several days in this valley.

F. W. Orbison, of the firm of O'Keefe & Orbison, has been appointed city engineer of Kaukauna.

G. D. Millsbough, of Cleveland, visited Fox River industries last week.

George Kispert, machine tender at the Outagamie Paper Company's mill in Kaukauna, and George Garvey, machine tender for the Kaukauna Paper Company, removed to Appleton last week.

It is reported that Charles W. Howard, of Neenah, formerly of the Howard Paper Company, has purchased a coal mine in Arkansas.

FOX RIVER.

Chicago.

[FROM OUR REGULAR CORRESPONDENT.]

WESTERN OFFICE PAPER TRADE JOURNAL,
56 and 58 La Salle Street,
CHICAGO, May 16, 1894.

There has been rather more talk of dull times among leading men of the paper trade here during the past few days than at any time within the five weeks preceding. Not that any of them are in that lamentable state called "blue," but the general expression is that business is not what it should be. The market is quite weak and inclined to be spasmodic; sales are good for a day or two at a time, almost leading dealers to think that a veritable "boom" is about to begin, and then falling back again. It is said, too, that some of the mills are rather anxiously inviting bids; or, as one man expresses it, "fishing for offers."

This same gentleman, however, wisely tells them that prices are already low enough; bids them "lie low," and wait for a better turn, rather than to try to force business by breaking the market. Those mill which reduced their prices a month ago seem to have already realized the force of this reasoning, for they are said to be now the firmest in maintaining fair figures. This fact it is hoped and believed will help to stiffen others, so that the market may not be allowed to fall below the point where profit ceases.

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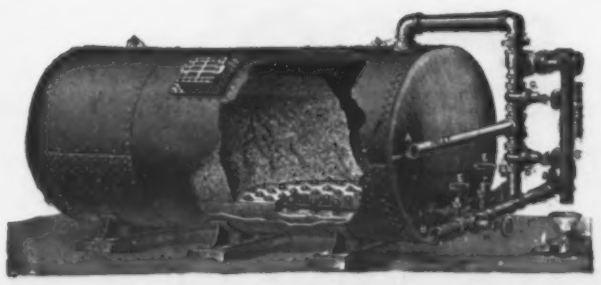

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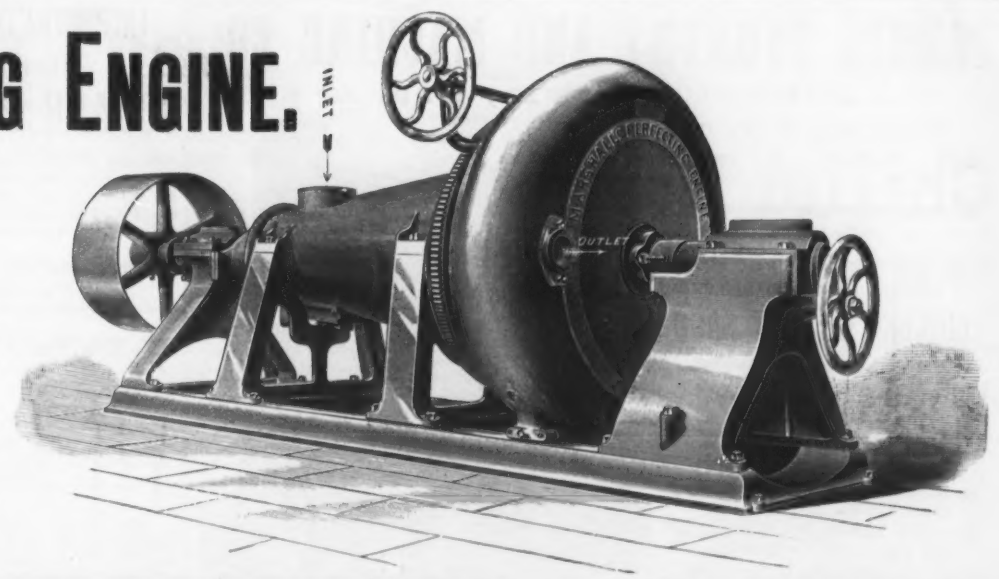

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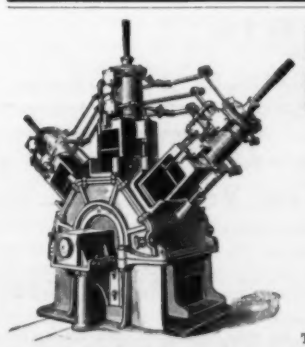

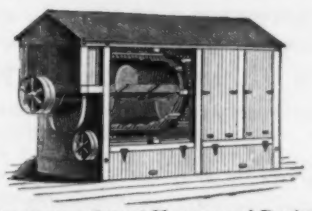

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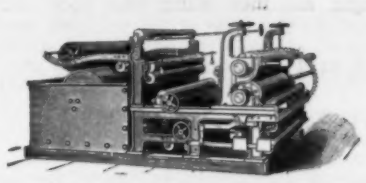

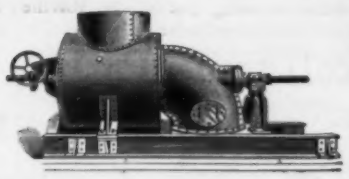

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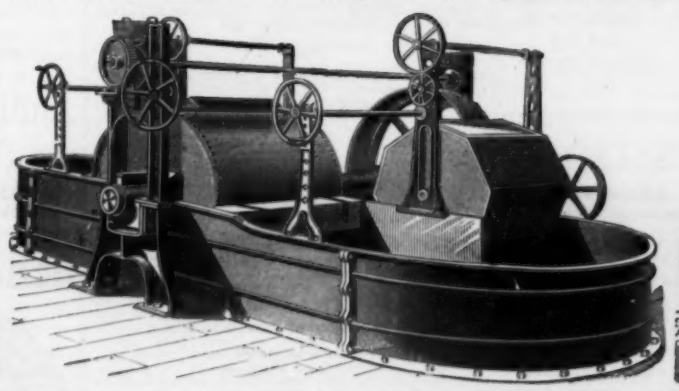

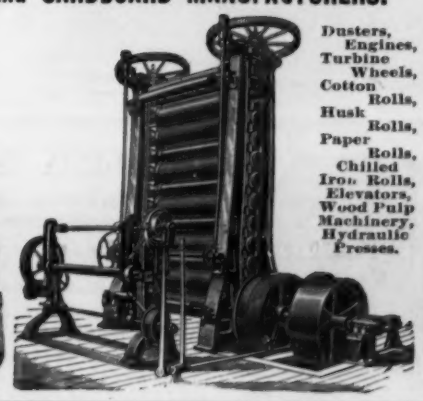

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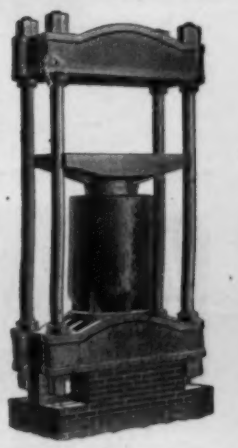

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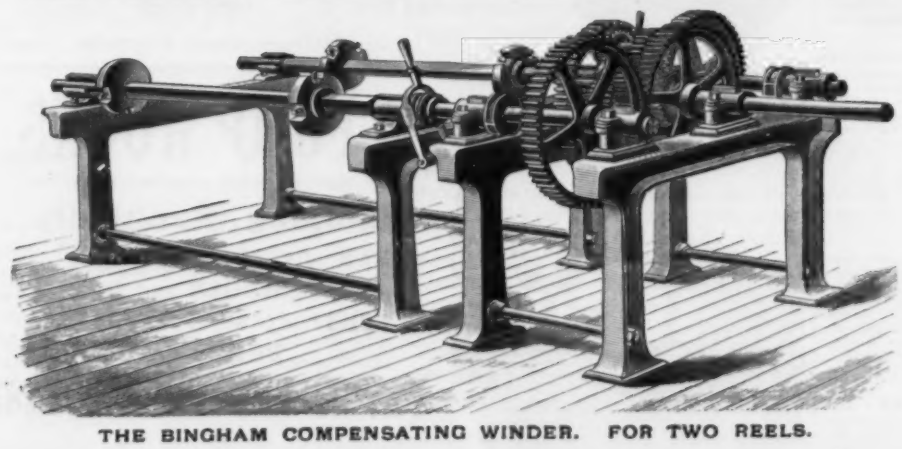

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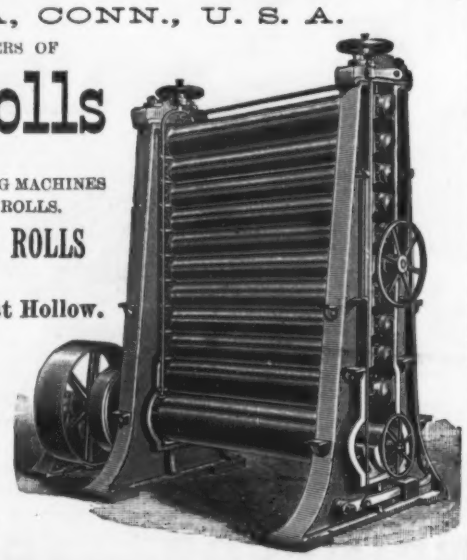

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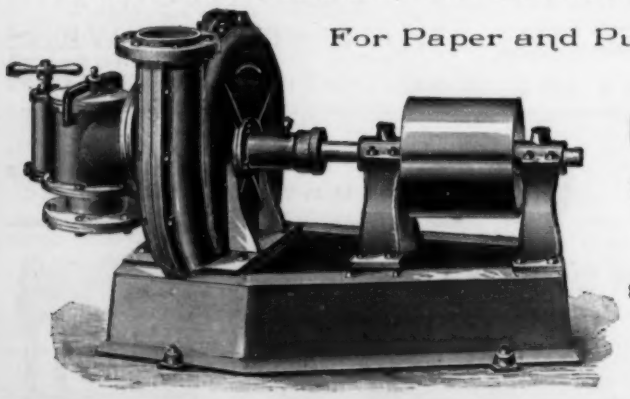

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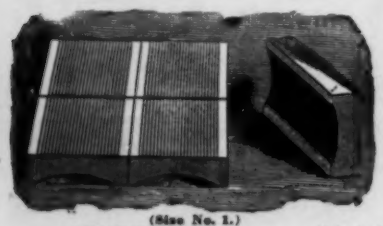

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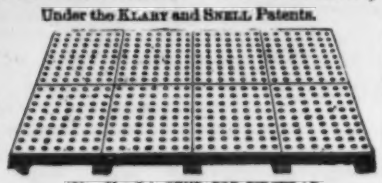

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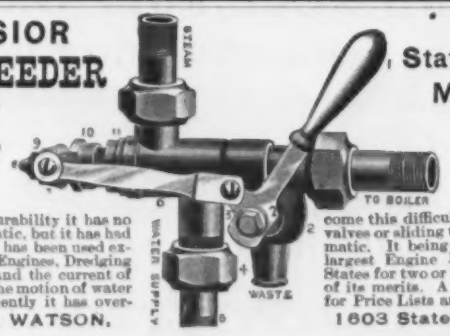

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CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Rosin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

CHAPTER X.—**Electro-Chemistry,** with reference to bleaching, manufacturing of pulp, manufacturing of chlorine and soda.

APPENDIX.—Metric system; tables of specific gravities; strength of solutions; list of sulphite patents, &c.

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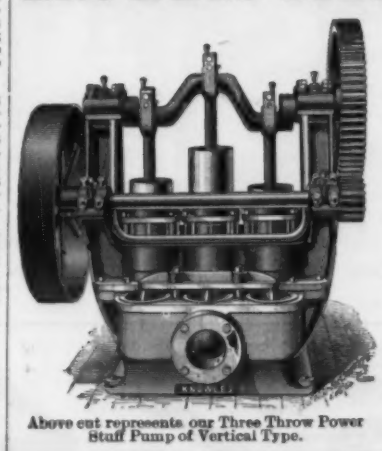

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of quiet trade, a very fair volume of business is being done. As an instance it may be mentioned that a representative of one of our largest concerns sold on a recent Western trip eight car loads of paper in a week, besides closing two large contracts for future delivery, one being for twenty-five and the other for sixty-five cars of news print.

From sundry other quarters, too, come reports of good sales, not many very large orders indeed, but yet very numerous. So long as this state of things continues the bottom is not out of trade by any means.

The gentlemen referred to above as having had such a prosperous trip west reports having met a competitor at Omaha, who was on a terrible jamboree for two or three days, and was quoting paper all the way from fifteen-one-hundredths to one-quarter of a cent below the market. This individual claimed to have sold six car loads of paper, but in reality did not sell a pound, although said to be one of the oldest and best known men in the trade. Another proof that the "wild and woolly West" prefers to deal only with men who know what they are doing.

Nothing definite in regard to the alleged association of independent strawboard mills has come to the surface since my last letter. Rumors are flying around, but they are too vague and intangible to be recorded here.

There is a reported tendency among those handling coarse papers to combine for better prices.

A sharp advance has occurred in the price of straw paper, which is attributed to the scarcity of coal. The instances already noted are 5 and 10 cents per cwt. with the prospect of going yet higher. The mills, it is said, will accept no orders ahead.

Some Western mills and dealers are complaining bitterly of the tactics pursued by certain Eastern members of the trade, who seem to be trying to break the market here. Were they offering their paper on its merits no objection would be made, as the country is wide and the whole of it is open to all; but what our Western friends do condemn is that, instead of offering to sell at the same prices as in the East, the men referred to are simply invading this territory with cut prices. A well-known publisher in Michigan had print paper offered him the other day, by a representative of one of the largest jobbing concerns in the East, at 2½ cents in bundle lots—as many or as few bundles as he wanted.

An ugly feature of the situation is the assertion, confidently made, that the railroads are backing up such practices by giving rates which they will not give to Western men shipping East. So long as navigation remains open this may be counteracted to a degree by securing combined rail and water rates; but it is felt to be a gross injustice and has aroused much indignant protest.

There is talk of a combination by certain Western mills to send several salesmen East and meet these people on their own ground—"fight the devil with fire," so to speak. A man lately returned from that quarter reports having made some very good sales, and should any such movement as that outlined above really take place its promoters expect to "get even in great shape."

Saturday afternoon closing, beginning with the first Saturday in May, has gone into general effect among the trade of this city. The head of a large house gravely informed me last Saturday that the object of it was to give the boys a chance to play base ball while the proprietors would look on and learn. He said, too, that the latter would like to form a "Nine" among themselves if they could only find another to play against them.

George H. Taylor has returned to the city after an absence of four months, greatly improved in health. No one meeting him would suppose that he ever had a day's illness in his life. Most of Mr. Taylor's time while away was spent in California; he was for one month in the Hawaiian Islands, however (principally in Honolulu), and comes back charmed with the country and its people.

He has very decided opinions, too, concerning the political questions now agitating the Islanders, which may be given in a future letter.

Notwithstanding the delightful time he has had, Mr. Taylor expresses himself as glad to get back. "I have come to this conclusion," he said this morning, "that from April 1 to January 1 dirty old Chicago is the best place I have found yet—best for Taylor, anyhow."

A. T. Hodge, vice-president of the Chicago Paper Company, has just got back from a business trip to St. Paul and Minneapolis.

W. C. Gillett, treasurer of the same company, is suffering from a sprained wrist. He says that what THE PAPER TRADE JOURNAL said recently about his athletic powers had so inspired his courage in that direction that he ventured too recklessly in throwing himself around on the "German horse" at the Athletic Club the other day, and as a consequence came to grief. Sad, but true, that "pride must have a fall."

Geo. D. Forest, secretary of the same company, says that he wishes it had been a boy, as this one girl more makes "three of a kind." Nevertheless, as the dear little angel is a bouncing 9 pounder, and as the whole affair passed off so nicely, he is as happy as a clam at high tide, and is not yet done receiving the congratulations of his many friends.

J. C. Armstrong, local representative of Wm. M. and J. S. Van Nortwick, has returned from a brief visit to their mills at Appleton. He found the people of the Fox River Valley somewhat disposed to complain of dull times, but business was progressing fairly well.

E. B. Mensden, connected with the same enterprising firm, came in a few days ago from a very successful Western trip.

Rush Evans, who has been East for some three weeks, looking after various matters there, got back to his Chicago office on Saturday.

Dr. Richard T. Higgins has been appointed general manager for the Columbia Straw Paper Company, with offices at 916 Chamber of Commerce Building, in this city.

F. M. Spaulding has recovered from his recent illness, and has gone East on a ten days' business trip.

D. B. Anderson, of the Eagle Paper Company, Franklin, Ohio, was in town last week. Mr. Anderson is best known, outside of paper trade circles, as the owner of the fast trotter, Nightingale. Unlike most turfmen he is not given to boasting, but his friends say that this gallant mare won for him last season some $32,000 in prizes.

Other visiting members of the trade during the week were E. A. D. Reynolds, of the Fox River Paper Company, Appleton, Wis.; W. Z. Stuart, of the Kimberly & Clarke Company, Neenah, Wis.; Wm. Gilbert, of the Gilbert Paper Company, Menasha, Wis.; Clarence Harding, of the Harding Paper Company, Franklin, Ohio; A. B. Mudgett, of the Tytus-Gardner Paper Company, Middletown, Ohio; Ed. Butler, of the Smith Paper Company, Lee, Mass., and E. M. Phelps, of the Parsons Paper Company, Holyoke, Mass.; also J. A. Kimberly, of the Kimberly & Clark Company, who has since gone East to look after a large contract for special pink paper, and Adam Brown, formerly of the Howard Paper Company, Neenah, but who now has other ends in view.

A big man in the paper trade, hailing from an Eastern city, who despite his great wealth and influence is rather unpopular (possibly on account of his would-be lordly manner), called as usual at one of our principal jobbing houses one day last week, and after he had left a fine large prune was found upon the chair where he had been sitting. "Well," said the chief clerk, upon being shown this trophy by the office boy, "I always thought that fellow was full of prunes, and now I know it."

Another incident happened some little time ago (though not yet, I believe, printed), in which the "hoss" was rather "on" the Chicago man participating. This gentleman's firm had bought a large bill of paper from one of the most prominent manufacturers of the Eastern country, with which it was not satisfied. After some correspondence regarding the matter the manufacturer himself, being on a trip West, came to Chicago and called at the store of the firm in question. The gentleman referred to in the beginning happened to be in the office, and they soon became involved in quite a heated discussion. In scrutinizing a sheet of the paper the Chicago man (whom for convenience we will designate as A) tried to scratch some specks off with an eraser, his design being to show that they went clear through, but the result of the scratching process being to materially weaken the paper wherever it had been applied. To examine the sheet more closely they started toward the side door of the warehouse, which opened on a court, and as they walked along A gave the paper a pretty hard pull, and several tears appeared. "T-h-e-r-e!" said the man from down East (whom we will call B, and who has a slight impediment in his speech), "of course a-n-y-t-h-i-n-g w-w-w-o-u-l-d tear if you s-c-r-a-t-c-h-e-d h-h-h-o-l-e-s in it!" "Humph!" answered A, "it's d——d poor paper that won't stand a little thing like that!" They were now standing in the doorway, and just as A had made the above rather pointed remark somebody from a window in the building high up toward the sky let fall a beer bottle, which, falling upon the pavement at the feet of the two gentlemen, smashed into a thousand pieces. "Great Scott! what's that?" exclaimed A, who is somewhat excitable. "Oh, that's n-o-t-h-i-n-g," replied B. "D-d-d-a-mn-ed poor b-o-t-t-l-e that w-w-o-n't stand a little th-i-n-g l-i-k-e that!" R. B. D.

Holyoke.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., May 17, 1894.

This has been another quiet week with the trade and if there has been any change in the condition of business it was hardly noticeable. Manufacturers have learned how to take things philosophically and if anything comes their way they take it and are content.

The movement of finished goods has not increased in volume over that of the few past weeks. The same spirit which has governed buyers for some time—to order nothing beyond actual needs—is yet in vogue.

Some mills have a sufficient number of small orders on hand to keep the machinery in motion for the immediate future, but the big orders of seasons gone by are not to be had. If the tariff question is ever settled business may pick up, but there can be very little improvement before then.

The *Transcript* Publishing Company's striking printers are still out. Editor Dwight has managed to secure compositors enough from outside to set up the newspaper every day, but his job department is very short handed. All of the labor unions of the city have espoused the cause of the Typographical Union, and money is being furnished to the strikers with which to carry on the fight. Both sides are waging a lively warfare, and both are determined to hold out to the end. The union men realize that if they are beaten in this contest it will be a death blow to unionism here.

The S. Worthington Paper Company (which does not make paper) has just made this corporation return: Fixed capital, $20,000; capital paid in, $20.000. Assets—Cash and debts receivable, $34,296; manufactures and merchandise, $18,033; miscellaneous, $1,620; total, $53,949. Liabilities—Capital stock, $20,000; debts, $33,949; total, $53,949.

The Norman Paper Company has just elected these officers for the ensuing year: President and treasurer, James H. Newton; clerk, Homer J. Stratton; directors, J. H. Newton, Moses Newton, J. C. Newton, W. H. Prescott, J. H. Whitcomb, J. B. Clement, W. D. Martin, E. P. Newton, H. J. Stratton. Fred H. Newton, the former treasurer, has gone to Colorado to engage in the mining business.

F. A. Rivers, the well known contractor, has begun proceedings in equity against the Carew Manufacturing Company, of South Hadley Falls, for $4,000, which sum Rivers claims is due him for extra work done for the company over and above a contract for $11,000 in 1892. The hearing is going on at Springfield.

The following figures show the present condition of the Taylor Manufacturing Company: Capital, $15,000; capital paid in, $15,000. Assets—Machinery, $9,506; cash and debts receivable, $6,972; manufactures and merchandise, $6,397; profit and loss, $385; total $23,260. Liabilities—Capital stock, $15,000; debts, $8,260; total, $23,260.

B. F. Perkins & Son, of this city, who own a paper mill at South Hadley, are putting in two steam boilers, one of 40 and the other of 80 horse power. A smoke stack 65 feet high is also being added to the building.

James W. Toole, superintendent of the Riverside Paper Mill, has bought a nice residence on Elm street.

The Newton Paper Company at its annual meeting held last Saturday elected these officers: President, Moses Newton; vice-president, James Ramage; treasurer, George A. Clark; directors, Moses Newton, James Ramage, James H. Newton and George A. Clark. The company's affairs are in a very satisfactory condition.

The affairs of the Eureka Ruling and Binding Company have been satisfactorily adjusted within a day or two and the suits have been abandoned. Business has been resumed.

C. A. Jacobs' printing establishment at Chicopee was burned out one night last week and the loss will exceed $2,500.

William Whiting has been selected president of the Holyoke Public Library Association, and among the other officials are J. S. McElwain, E. C. Taft, J. H. Newton and George A. Clark.

C. L. Allen, formerly a draughtsman with the Holyoke Machine Company and Holyoke Hydrant and Iron Works, but more recently with the Crocker Manufacturing Company, has resigned and will leave Holyoke. H.

Boston.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, May 17, 1894.

Business conditions show no improvement in any one branch of the paper trade so far as surface indications show.

Store trade among jobbers of print papers is so limited in volume that one of the bright young men of a leading city house remarked to me that he thought his firm was the only paper house in town paying expenses.

In manillas and wrapping papers trade is much better than in print papers.

Printing houses are having a dull spell and little activity is looked for until many weeks hence.

The big book publishers are not buying much paper this spring. It is asserted by one pretty well posted in this particular line that the volume of orders for paper so far placed this year by Boston publishers is not over 25 per cent. of the regular average business coming from that source. No wonder that book papers are dull and that the big printing presses are idle.

The chemical fibre mills feel the falling off in the movement of book paper very seriously.

To report upon the paper stock and chemical market requires little space, so little business is being done in paper mill supplies at the present time.

The affairs of the E. J. Hickey Company, which concern failed some months ago, are nearing a settlement. By authority of the court the assignees of the embarrassed company have sold to H. D. Pope, treasurer of the Rice-Kendall Company, as trustee for his company, all of the property of the E. J. Hickey Company, which includes the paper mill and wall paper printing plant at Middleton, Mass., the mill property at Newton Upper Falls, Mass., and the store business carried on at No. 35 Cornhill, this city. The business will be conducted by the trustee under the name of the "Middleton Paper Mill," and Mr. Hickey will continue his connection with the business, producing and selling wall paper. The plant at Newton Upper Falls will not be operated at present. By the arrangements thus made the assignees of the E. J. Hickey Company will be able to pay creditors 25 per cent. of their claims, as was offered under the terms of the compromise settlement, and assented to some time ago.

The A. Storrs & Bement Company is showing some very handsome samples of color work and half-tone prints done on their "Fine Art Super" paper. Among the collection is a fine print of a landscape scene printed from a gelatine plate, the details being brought out very clearly, even to the bark on the trees. The strong features of the "Fine Art Super" are not only its printing qualities, but its low price for such a high grade paper.

"Seen any trade visitors in the store this week?" I asked of a bright little lady typewriter who sits just next to the boss himself in a Congress street paper house. "Well, let me see," and then the lady said: "The only gentleman I can think of is Mr. Jackson, of Linton Brothers, Pawtucket, R. I." What an impression Benj. Jackson must have made—the only gentleman she could think of; wonder if she really meant it!

Charles S. Mayo, of the Merrimac Paper Company, Lawrence, Mass., is one of the regular weekly visitors to Boston and is met so often in town that he seems to be a part of the city trade. Mr. Mayo stated to your correspondent that his mill was running right along on full time. His coating paper factory, he said, was turning out 5 tons of fine, high grade enameled book paper a day, which found a quick market.

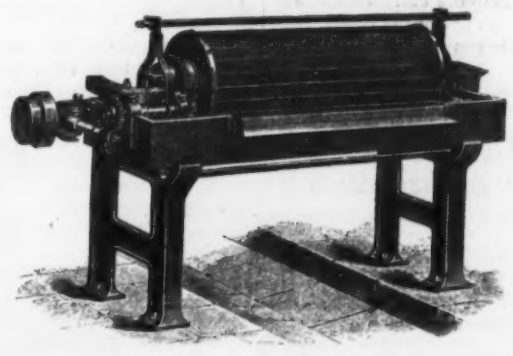
Arthur H. Hill, of Holyoke, Mass., was among the trade visitors during the week, his first visit to Boston for a long time. Arthur is a very popular fellew and his friends have long wondered what had become of him. He was formerly connected with the Holyoke Envelope Company, but went out West several months ago to connect himself with the Mead Paper Company of Dayton, Ohio, when he was taken sick and lost his health. He then made a trip to the West Indies, remaining there three months and growing healthy. He is now in good cheer and expects ere long to get back into harness again with some paper interest.

Other recent visitors were F. S. Lyman, of Augusta, Me.; J. Fred Webster, of Bangor, Me.; E. L. Gedney, of Jay, Me.; A. W. Moore, of Bradford, Vt.; Chas. E. Robertson, of Bellows Falls, Vt.; C. J. Barnard, of West Derby, Vt.; Oscar Hartwell, of Nashua, N. H.; Frank P. Carpenter, of Manchester, N. H.; Thomas Edwards, of Berlin Falls, N. H.; A. N. Lowe, of Fitchburg, Mass.; James Wallace and George M. Castle, of Springfield, Mass.; E. C. Rogers, and Mr. Sturtevant, of Holyoke, Mass.; Wm. Finlay, of Newton Lower Falls, Mass.; F. W. Farrell, of Philadelphia, H. K. Fullerton, Frank Squires, W. V. Hitchcock, W. C. Clark and C. A. Whedon, of New York.

T. H. Keenan, Pulsifer, Jordan & Co.'s trusty head accountant, is just recovering from a serious illness which kept him in bed for two weeks.

The several gentlemen who went to Camp Bristol, on the border of Newfound Lake, N. H., as guests of Col. S. P. Train, last week, have returned to town, and they tell some very fishy stories. The colonel talks about catching fresh water salmon weighing 10 pounds, and another of the party is said to have kicked his little 2 pound fish back into the lake—he wanted bigger game and was running in hard luck; but the party had a fine time and they were most royally entertained, Colonel Train leaving nothing out that was calculated to add to the comfort and pleasure of his guests.

Boston's baseball grounds at the South End was the scene of a very disastrous fire last Tuesday afternoon, and the fine grand stand with everything else about the grounds for several blocks around were soon in ashes. For a while it was pretty hot ball. DELESDERNIER.



REVOLVING PULP STRAINER.

Revolving Pulp Strainer.

The pulp strainer, illustrated herewith, is an English invention.

It consists of a revolving drum, to which a vibratory motion is imparted, for clearing the slits preparatory to the pulp passing through them. The area of the drum is very large, thus enabling a very considerable quantity of pulp to be passed through for feeding the paper machine. The knots and strings are collected by projecting ribs on the inside of the drum, up to the top of which they are carried in its revolution, and dropped into an internal tray, off which they are carried automatically to an auxiliary strainer, where they are treated preparatory to being again returned to the strainer which supplies the machine. The strainer is so constructed that the wearing parts can be detached and replaced at a minimum of cost. When the slits of the drum are worn and become widened the drum can be taken to pieces and the slits reclosed.

The Postage Stamp Contract.

Postmaster General Bissell sent to the House of Representatives on Thursday a reply to a resolution of that body asking for information relative to furnishing postage stamps to the Post Office Department during the contract term of four years beginning July 1, 1894. The communication consists of a copy of the department's advertisement for proposals for stamps, the proposals submitted by the various bidders and the bid of the Bureau of Engraving and Printing.

From the papers submitted and those on file in the department Mr. Bissell says that it will be observed that, while the ability of the lowest bidder to perform the work involved in the contract was questioned, the ability of the bureau was not—its legal authority to perform the work was alone doubted. It was strongly urged, however, in behalf of the bureau that it was in a position successfully to compete with the other bidders, because its specially skilled labor necessary for this work was only partly employed, and further that it was already engaged in the manufacture of adhesive stamps for the Internal Revenue Service, a class of work quite similar to that comprehended in the furnishing of adhesive stamps to the Post Office Department.

Everything in the case appearing to warrant it, all the formal bids were rejected, and the work was awarded to the bureau.

New Inventions—XXXV.

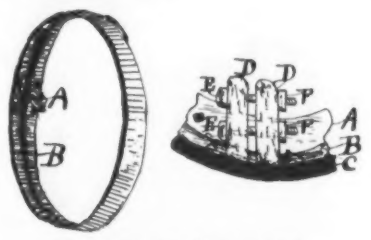
[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY GEO. DAMON RICE.

A patent was recently taken out by a man who had invented a metal rim to be placed over the regular tire of a carriage tire. For carriage use this rim was 2 inches wide, but for cart use it was nearly double that width. The object of these rims is to furnish means by which teamsters may carry with them a broad rim for their wheels, so that when striking a soft spot in a country road the rims may be put on over the narrow tires, thereby preventing the wheels from sinking in the mud; but the rims proved too heavy and bulky.

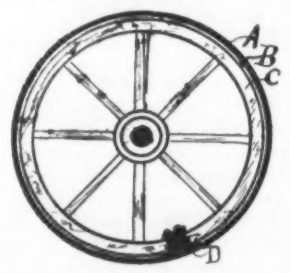
Many sets were made and sold, but the teamsters found it inconvenient to increase the weight of their load. The patent covered an iron or metal rim for this purpose. Now another inventor steps in and asks for a patent on rims for this purpose, but made exclusively of compressed paper. The models of the new paper rims have been examined by the writer and found to be remarkably tough. The inventor introduces a composition of fine wire shavings and cow hair into the pulp while the latter is soft, and this adds strength. Then the hydraulic pressure which is brought to bear upon the rims during the last stages of making them completes the durability.

Of course the rim must be adjustable, and in the following illustration it is shown how the parts are managed.



THE RIM AND ADJUSTMENT.

In the illustration the circular piece represents the appearance of the rim when it is ready to apply to the wheel. There is only one adjustment and that is at the point marked A. The regular clamp and nut device, to be seen on many things of this kind, in which it is necessary to draw two ends together, is used. Along the centre of the inner side of the rim is a hollow designated by the dark part B in the cut. This is supposed to fit over the tire of the wheel, thus helping to hold the rim firmly in place over rough wheeling. An enlarged view of the clamp arrangement is shown in the other illustration, in which A is the wooden part of the wheel, B the iron tire and C the adjustable paper rim. It can be seen how the two ends come together. The clamp is furnished with sides D, D, and these of course are of metal and are riveted to the paper rim. The two bolts, there being two more on the other side, are marked E, E, and these are tightened by the use of the nuts F, F. Of course the tighter the nuts are screwed the tighter the rim will fit around the tire of the wheel. After the rim has been put upon the wheel the appearance of the latter is about as seen in the next cut.



SHOWING THE RIM IN PLACE.

In this cut the wooden part of the wheel is designated by C, the regular tire B, the paper rim A and the clamp adjustment D.

The inventors of the new rim of paper have informed the writer that there is a good field for the use of rims of this nature. Farmers throughout the West are particularly in need of some means whereby they can get a firmer foundation for their carts. Wheels with narrow tires can be drawn heavily loaded over soft ploughed land when the broad tires are put on so as to prevent the sinking of the wheels. Then ordinary wheeling over country roads anywhere can be made easier for the horses by using broad rims on the wheels. Metal rims are not convenient to carry. Then, too, they are costly, for they have to be forged out. The two main difficulties are evidently overcome by the advent of the paper rims, for not only are the rims so light that the whole set of four can be thrown over the shoulder and easily carried, but the cost of making paper rims is small. There is no forging nor is there need of a skilled blacksmith, who would spend a day in forging the shapes, for the whole rim of paper can be run off in a mold in quick time. Then comes pressing so as to make the rim solid; then the putting on of the clamps, then painting and the rim is ready for the market.

Wood Pulp, Soda AND Sulphite,
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G. RAU, TIMES BUILDING, **New York.**
SOLE AGENT FOR THE U. S. AND CANADA:
ROZÈS AINÉ & FRÈRES, Agen,
Well-known Packers of Linens and Cottons.
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1892 **1894**

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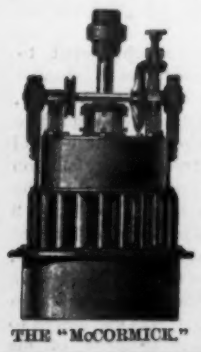
COMPARATIVE PRODUCTION For ONE DAY:

May 1st, 1892, ...	1,199,000
May 1st, 1894, ...	**2,591,000**

McCORMICK AND SUCCESS TURBINES,
VERTICAL OR HORIZONTAL.



THE "McCORMICK."

The McCORMICK Turbine gives more power per diameter with a higher percentage of useful effect from the water used than any other water wheel heretofore made. All sizes, both right and left hand, tested in the Holyoke testing flume.

The SUCCESS Turbine, long and favorably known in the paper trade as a first-class water wheel, possesses valuable features found in no other turbine, and gives a high percentage of useful effect from the water used.

THE McCORMICK and SUCCESS TURBINES are especially adapted for driving Paper and Pulp Mills and are extensively used by the largest manufacturers in the United States and Canada. Parties using wheels which are unsatisfactory and those contemplating the improvement of powers will find it to their interest to confer with me, as I am willing to guarantee results where others have failed, no matter what make of turbines has been tried.

State requirements and send for catalogue.

Heavy Power Transmitting Machinery a Specialty.

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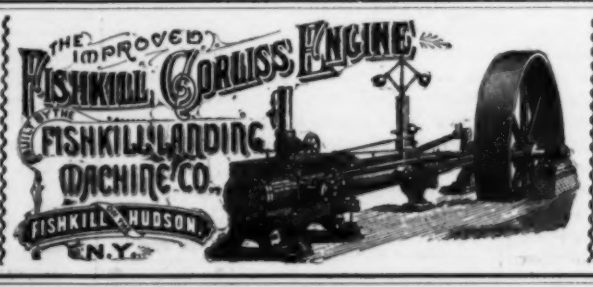
THE "SUCCESS."

A NEW
"CORLISS" ENGINE.
Embodying many marked
IMPROVEMENTS,
Resulting in the production of the
MOST EFFICIENT
And ECONOMICAL POWER in the World!



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Has the indorsement of many of the leading Manufacturers and great Corporations of the United States, as well as high Testimonials from eminent Engineers.

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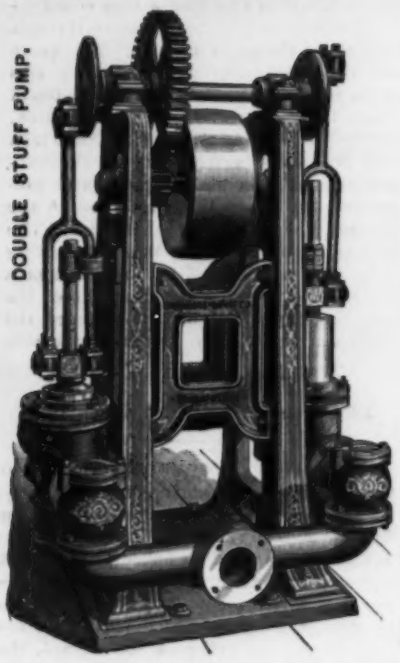

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Paper Machinery
FOURDRINIER
AND
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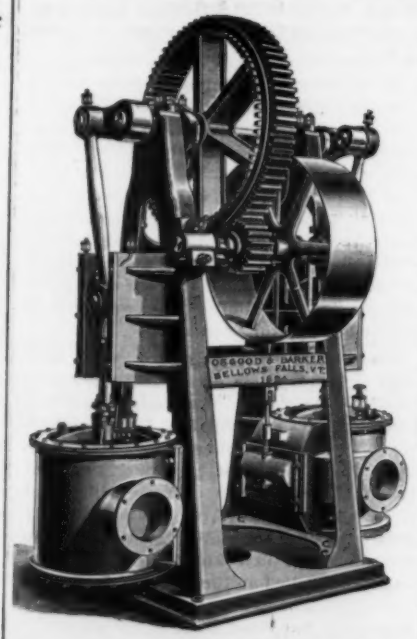
CLUTCH
PULLEYS,
&c., &c.

THREE PLUNGER SUCTION PUMP.

OSGOOD & BARKER, BELLOWS FALLS, VT.



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Sulphur Burners,
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Knot Boring Machines,
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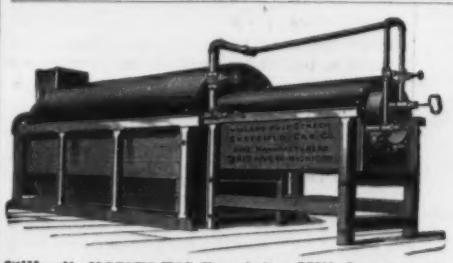

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No waste of stock.
No attention required.
Noiseless.
No wearing parts to give out.
Works automatically.
Delivers slivers clear of screen without attention.
Less help required in running.
Screen plates warranted for three years without recutting.
Requires only ½ Horse Power to operate.

SHEFFIELD CAR CO., Three Rivers, Mich.

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AJAX ANTI-ACID METAL,
FOR THE RESISTANCE OF ACIDS AND ALKALIES.
ESPECIALLY ADAPTED FOR
Digesters, Sulphite Machinery, &c., &c. We sell the Metal in INGOTS, furnish CASTINGS, any size as per patterns, and COCKS, VALVES and FITTINGS of every description.
THE AJAX METAL CO., INCORPORATED, **PHILADELPHIA, U. S. A.**
WE INVITE CORRESPONDENCE.

ALUM!
THE MERRIMAC POROUS ALUM is unsurpassed for **purity** and good results.
All other grades of Alum for paper makers' use and for filtering purposes. Address
MERRIMAC CHEMICAL CO., 13 Pearl Street, Boston.

ESTABLISHED 1833. INCORPORATED 1891.
STANDARD STAVE & COOPERAGE CO.
MANUFACTURERS OF
CEDAR, CYPRESS, PINE OR OAK
RESERVOIR TANKS
OF ANY SHAPE OR CAPACITY, FOR
PAPER AND PULP MILLS.

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—Illustrated Catalogue upon Application.—

Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED MAY 11, 1894.

An. Colors..	626	$37,326	Paper.....	3,447	$27,583
Alum.....	65	399	Steel Pens...	2	1,868
Alum's Cake	—	—	Stationery...	17	2,744
Bl. Powders	1,051	20,195	Slate Pencils	—	—
Soda Ash...	1,065	2,304	Clay.....	—	313
Soda, Caus.	876	11,302	J'te B'ts, &c.	—	—
Soda, Sal....	—	—	P. Hangings	19	705
Soda, Hypo.	—	—	P'p'r Stock..	6,511	44,339
Ultramarine	76	1,928	Terra Alba..	—	—
Books.....	261	23,329	Waste.....	—	—
Newspapers.	295	9,346	Wood Pulp..	1,083	8,437
Engravings.	87	8,844			
Ink.....	30	1,257			
Lead Pencils	—	—	Totals....	15,111	202,119

Imports General Merchandise for the week ended May 11, 1894.....$7,912,606

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO MAY 16, 1894.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	1,249	....	....	....	....
Antwerp.....	264	259	632	....	4,981
Aspinwall	90	....	....	....	....
Bordeaux.....	230	....	....	....	....
Bremen	532	....	....	....	3,930
Bristol.....	....	....	....	....	1,950
Buenos Ayres.	26	....	....	....	....
Calcutta.....	....	....	....	....	2,797
Cent. America	60	....	....	....	....
Christiania....	....	....	396	....	474
Copenhagen..	353	....	479	....	761
Dublin.....	....	186	....	....	....
Dundee.....	....	....	....	....	611
Dunedin.....	....	....	....	....	183
Fiume.....	....	....	90	....	....
Geestemunde.	262	....	....	....	1,809
Genoa.....	....	....	....	....	3,256
Glasgow.....	229	77	....	....	77
Gothenburg ..	....	....	52	....	....
Hamburg.....	1,058	103	443	....	2,381
Hiogo.....	7,119	....	....	....	....
Hull.....a	1,706	128	889	....	8,272
Kobe.....	27,285	....	....	....	....
Leghorn.....	1,520	....	....	....	....
Leith.....	....	159	....	....	....
Liverpool.....	166	740	....	....	2,951
London.....	2,050	1,008	20	....	6,670
Marseilles....	86	....	....	....	473
Nassau.....	48	....	....	....	....
Newcastle.....	....	73	....	....	1,408
Rio.....	26	....	....	....	....
Rotterdam....	435	....	414	....	4,011
Southampton.	....	....	....	....	160
Stettin.....	2,054	....	596	....	4,990
Trieste.....	....	....	49	....	....

a. Including 347 bales cotton waste.

NEW YORK IMPORTS.

FROM MAY 9 TO MAY 16, 1894.

Paper Stock.

Train, Smith & Co., Waesland, Antwerp, 226 bs. bagging.
Castle & Gottheil, by same, 274 bs. bagging.
James Pirnie, by same, 666 bs. bagging.
J. W. Mason & Co., by same, 100 bs. manillas.
G. Rau, Friesland, Antwerp, 72 bs. bagging.
Oelrichs & Co., Roland, Bremen, 23 bs. manillas.
Jessup & Moore Paper Company, Bolivia, Hamburg, 150 bs. rags.
Castle & Gottheil, by same, 159 bs. rags.
Castle & Gottheil, Hindoo, Hull, 276 bs. bagging.
Burgess & Co., by same, 408 bs. bagging.
G. W. Millar & Co., by same, 1,132 bs. bagging.
J. W. Mason & Co., by same, 130 bs. manillas.
F. Bertuch & Co., by same, 45 tons chemical fibre.
G. Rau, by same, 8 bs. rags.
J. W. Mason & Co., Tauric, Liverpool, 70 bs. manillas.
J. Libmann & Co., Greece, London, 61 bs. rags.
G. Rau, America, London, 82 bs. rags.
Darmstadt & Scott., Richmond Hill, London, 15 bs. rags.
G. Rau, by same, 62 bs. rags.
Darmstadt & Scott, Manitoba, London, 97 bs. papers.
F. T. Montell & Son, Antilia, Nassau, 12 bs. rags.
Train, Smith & Co., Rotterdam, Rotterdam, 98 rags, 51 bs. bagging.
G. Rau, Glendower, Rotterdam, 20 tons chemical fibre.
F. Bertuch & Co., by same, 10 tons chemical fibre.
J. W. Mason & Co., Island, Stettin, 90 bs. manillas.
F. Bertuch & Co., by same, 93 tons chemical fibre.

Paper.

A. L. Monson, Majestic, Liverpool, 3 cs.
Nevius & Haviland, by same, 3 cs. and 2 cs. hangings.
G. Gennert, Roland, Bremen, 13 cs.
Eimer & Amend, Rotterdam, Rotterdam, 5 cs.
E. & H. T. Anthony & Co., by same, 16 cs.
Dingelstedt & Co., by same, 4 cs.
Marcus Ward & Co., Hindoo, Hull, 13 cs.
L. De Jonge & Co., Glendower, Rotterdam, 4 cs.
Dennison Manufacturing Company, Campania, Liverpool, 37 cs. and 2 bs.
Druckleib & Co., La Bretagne, Havre, 25 cs.
American Tobacco Company, by same, 11 cs.
C. Glaenzer & Co., by same, 9 cs.
R. F. Downing & Co., Aller, Bremen, 6 cs.
W. Heuermann, Russia, Hamburg, 16 cs.
American Tobacco Company, by same, 7 cs.
Henry Lindenmeyr & Sons, Friesland, Antwerp, 14 cs.
John Campbell & Co., by same, 11 cs.
Scovill & Adams Manufacturing Company, by same, 13 cs.
W. Seyd, by same, 14 cs.
J. K. Gapen, by same, 6 cs.
A. H. Abbott & Co., by same, 10 cs.
W. P. Buchanan, by same, 16 cs.
The Photo Material Company, by same, 7 cs.
Max Frankel & Son, Tauric, Liverpool, 3 cs.
O. G. Hempstead & Co., by same, 2 cs.

BOSTON IMPORTS.

FROM MAY 10 TO MAY 16, 1894, INCLUSIVE.

Paper, &c.

Carter, Rice & Co., Polynesia, Hamburg, 15 cs. paper.
A. P. Schmidt & Co., by same, 6 cs. printed music.
Frost & Adams, Gallia, Liverpool, 16 cs. papers.
H. A. Turner, by same, 1 cs. paper hangings.
G. S. Terrizian, by same, 1 cs. paper.
Wadsworth, Howland & Co., Bostonian, Liverpool, 8 cs. papers.

Paper Stock.

C. A. Cheney, Norseman, Liverpool, 49 bs. manillas.
True & McClelland, by same, 114 bs. waste paper, 7 bs., 60 coils manillas.
R. H. Overton & Son, by same, 208 bs. manillas.
Order, British Empire, London, 134 bs. rags.

Sizing.

Thomas Groom & Co., Norseman, Liverpool, 60 bags.

Bleaching Powder.

J. L. & D. S. Riker, Bostonian, Liverpool, 94 cks.
Linder & Meyer, by same, 79 cks.
J. L. & D. S. Riker, Norseman, Liverpool, 84 cks.
Fuerst Brothers, Gallia, Liverpool, 48 cks.

Soda Ash.

J. L. & D. S. Riker, Bostonian, Liverpool, 488 bags.
Wing & Evans, by same, 119 cks.
Warren & Co., Norseman, Liverpool, 75 cks.

Soda Crystals.

Warren & Co., Norseman, Liverpool, 140 bbls.

Crude Sulphur.

Linder & Meyer, Bostonian, Liverpool, 1,338 bags.

Cellulose.

Watson & Co., Polynesia, Hamburg, 505 bs.
Order, by same, 506 bales.

China Clay.

True & McClelland, Norseman, Liverpool, 108 cks.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED MAY 12, 1894.

Paper Stock.

R. Helwig, Illinois, Antwerp, 540 bs. wood fibre.

Soda Ash.

Pennsylvania Salt Manufacturing Company, Indiana, Liverpool, 38 tcs.

Soda Crystals.

J. I. Keefe, Indiana, Liverpool, 280 bbls.

Salt Cake.

Brown Brothers & Co., Indiana, Liverpool, 73 cks.

EXPORTS of Paper, &c., from New York for the Week Ended May 15, 1894.

BOOKS, cases, to Liverpool, 19; Hamburg, 1; London, 77; British West Indies 8; British Australasia, 8; Cuba, 16; Leipsic, 3; Mexico, 4; Argentine Republic, 3; British Guiana, 1; Berlin, 2; Bremen, 4; Barcelona, 1; British East Indies, 9; Chili, 4; Copenhagen, 3; Central America, 17; Stuttgart, 2; Siam, 1; Hayti, 1; New Zealand, 3; Venezuela, 4; Peru, 5; Southampton, 3.

PAPER, to Cuba, 412 pkgs.; British West Indies, 225 pkgs., 55 rms.; Venezuela, 34 cs.; Colombia, 9 pkgs.; Dutch West Indies, 8 pkgs.; London, 170 pkgs.; Brazil, 4 pkgs.; Liverpool, 37 cs.; Hamburg, 6 cs.; San Domingo, 6 pkgs.; Bremen, 1 cs.; Bremerhaven, 52 cs.; Chili, 71 cs.; Christiania, 42 pkgs.; Hayti, 1 pkg.; Mexico, 39 pkgs.; Peru, 1 cs.

STATIONERY, cases, to Cuba, 42; Colombia, 12; London, 29; British Australasia, 9; Venezuela, 18; Hamburg, 10; Hayti, 3; Liverpool, 9; Bremen, 1; Chili, 29; Dutch West Indies, 3; Dutch Guiana, 1; Ecuador, 2; New Zealand, 1; Peru, 6; Rotterdam, 1; Spanish possessions in Africa, 2.

CARDS, cases, to Havre, 2.

STRAWBOARD, cases, to Cuba, 63; London, 43.

PAPER BAGS, to New Zealand, 18 bls.

CARDBOARD, cases, to Cuba, 8; Venezuela, 1.

AGGREGATES AND VALUES.

Paper, reams.....	55	$28
Paper, pkgs.....	1,098	5,849
Paper, cases.....	131	4,511
Books, cases.....	227	11,839
Stationery, cases.....	187	9,153
Rosin, bbls.....	3,397	11,614
Totals.....	5,095	$42,994

Exports General Merchandise for the week ended May 15, 1894..... $7,196,081

New Rosin Standards.

The inspection committee of the Savannah Board of Trade held a meeting last week to select and approve the types of samples to be furnished to the inspectors to be used in grading rosins on that market. The Board of Trade has recently adopted several amendments to the rules regarding rosin inspection. It is required that all samples shall be at least seven-eighths of an inch square, and taken from at least 6 inches from the surface of the rosin, and the grading must be made to conform to the standard approved by the Board of Trade. The standard samples are marked "Approved by the Savannah Board of Trade," and are kept constantly on hand in the exchange room.

The samples are to be renewed every two months, or oftener if necessary, and every inspector of naval stores will be furnished by the inspection committee with approved type of samples at least once in two months, or oftener if necessary.

The inspectors are required to sample at the bottom, head or side of the barrel, of at least 5 per cent. of every mark of rosin grading K or better quality, and should false packing be discovered they must examine the entire lot of false packing, and the expense of this examination must be paid by the seller of the rosin. Every mixed packed barrel will be marked with both highest and lowest grade and both samples exhibited. This rosin will then be sold on its merits without reference to either grade, but if there is no special agreement made the settlement will be made at the price of the lowest grade.

Effect of Electricity on Steam.

At a recent meeting of the Royal Society of Great Britain, J. J. Thomson described an experiment showing the effects of electricity on steam. A current of steam was passed through the middle limb of a T tube, the closed side limbs of which were furnished with delivery tubes and also with gold or platinum electrodes, between which sparks might be passed through the steam. The delivery tubes conducted the gases into two eudiometers, in which the gaseous mixture, formed on passage of the sparks, was exploded. When the sparks were from 1.5 to 4 millimetres long, it was observed that within the limit of error of the experiment the volumes of the excess of hydrogen in the one tube, and of oxygen in the other, which remain after the explosion of the mixed gases, are respectively equal to the volumes of the hydrogen and oxygen liberated in a water voltmeter placed in series with the steam tube, and that the excess of hydrogen appears in the tube which is in connection with the positive electrode, the excess of oxygen in the tube which is in connection with the negative electrode.

When the spark length is greater than 4 millimetres, the first of the preceding results ceases to hold out, and when the spark length is increased to over 11 millimetres, the excess of the hydrogen, instead of appearing at the positive electrode changes over to the negative, the excess of oxygen at the same time going over from the negative to the positive electrode. When the sparks are very much longer, about 22 millimetres, reversal again takes place, the hydrogen appearing at the positive electrode. The author finds that when the arc discharge passes through hydrogen and oxygen respectively, the hydrogen behaves as if it had a negative charge and the oxygen as if it had a positive one.

TRAIN, SMITH & CO.,
IMPORTERS OF AND DEALERS IN
—ALL DESCRIPTIONS OF—
Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON,
BRANCH OFFICES: 36 BEEKMAN STREET, NEW YORK. 21 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
Woolen Rags and Paper Makers' Supplies,
86, 88 & 90 COVE ST., BOSTON, MASS.
WOOLEN RAGS GRADED IN COLORS AND QUALITY.
OUR SPECIALTIES: "EXCELSIOR" AND "STAR" PACKINGS.

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— IMPORTERS AND PACKERS OF —
PAPER STOCK.
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No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.
JOSEPH PORRITT & SONS'
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ALSO IMPORTERS AND DEALERS IN
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Jacketing, Roll Cloth, Double Extra Canvas, Ultramarine Blue.

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Office and Laboratory: 103 Milk Street, Boston.
EXPERTS IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

WILL. MUNDS,
Dresden, Germany.
—CENTRAL OFFICE FOR THE SALE OF—
Sulphite, Sulphate and Soda
PULPS.
Eighteen Mills for Chemical Wood Pulp represented
Bleached and Unbleached; supplied in all qualities and by all processes.
Specialty: The Strongest Fibred Qualities. (MITSCHERLICH PROCESS.)
STRAW PULP—FIRST-CLASS BLEACHED.

TRUE & McCLELLAND,
(LATE E. A. TRUE & CO.
PACKERS AND IMPORTERS OF
Paper Stock and Wastes,
OFFICE: 64 FEDERAL STREET, BOSTON.
Foreign Packing Branches: 19 Corporation St., Manchester; 97 Park St., Liverpool.

CASTLE & GOTTHEIL,
— IMPORTERS OF —
Sulphite and Soda Pulps,
LINEN AND COTTON RAGS,
JUTE STOCKS, SIZING, &c.
140 NASSAU STREET, — NEW YORK.

A. WERTHEIM & CO., Hamburg, Germany,
EXPORTERS OF ALL GRADES OF
SULPHITE AND SODA PULPS.
SIGMUND GOLDMAN, Agent for the United States and Canada, BENNETT BUILDING, 99 NASSAU STREET, NEW YORK.

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WILLIAM PINKNEY HAMILTON, Managing Partner.

Telephone—151 Franklin.
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NEW YORK: SATURDAY, MAY 19, 1894.

A NEW process for the manufacture of chlorine, accompanied by illustrations of the apparatus devised for carrying it into operation, is described on the first page of this issue of THE PAPER TRADE JOURNAL.

WE condole with Boston because of the fire which has swept over so much territory and made many homeless. Our sympathy is further extended to those members of the paper trade of that city—gentlemen in certain parlance known as "rooters"—who have been thereby bereft of the means for enjoying what is known as "the National Game."

THERE arrived this week on a ship from China a small lot of Chinese rags, presumably blues. This class of stock is not plentiful these days on this side of the water, and it is probably the first shipment of the kind for many years which has come to this country. Some men in the trade cannot remember when cargoes of similar goods have been reported in this market.

WE print in this issue the second paper of a series devoted to the consideration of electro-chemistry in the paper mill. The important part which we believe is to be taken by electricity in connection with manufacturing processes, paper making included, does not seem to be as yet generally recognized, or, if conceded, mill owners are slow to realize that their support is essential to the development of results. Investigators are at work everywhere following out the problem, and it might and propably would prove valuable to manufacturers to aid them in making practical demonstrations of the results of their effort.

IT is reported that the people of a certain Eastern township, after having induced the location of a large manufacturing plant in their midst by a promise of exemption from taxation for a stated period, now propose to levy a tax on the property. Such action, if carried out, will force an issue which should be determined at once. It is open to question whether it would not be an avoidance of a contract, for which exemplary damages could be claimed and allowed. It is to be hoped that the people of the locality referred to will not be led into any repudiation of their contracts. New England credit and integrity should be held high and maintained inviolate even if a bad bargain has been made.

MANUFACTURERS of American "news" no doubt appreciated the compliment paid them in the last issue of THE PAPER TRADE JOURNAL by its London correspondent. This class of papers has been growing in the esteem of English publishers, and is used probably to a greater extent than our correspondent is aware. Three or four years ago one or two London and as many prominent provincial papers began to use it, justifying their course on the same grounds presented in our London letter, viz., superior body, finish and strength. The critical comparisons complained of will do good; when a nation begins to find fault with itself improvement has already set in. The flattering reference to American supercalendered papers compels us to lift our hat, so to speak. Imitation is the sincerest flattery. We are generous enough to hope that English manufacturers will catch up to us—if they can.

WE do not quite understand the kind of loading charged against English "news," and which our correspondent says is "all nonsense;" but it recurs to us that the British manufacturer is a master hand at giving a fair appearance to very poor substance. Much of the commerce of Great Britain has been built up on just such fictions. Most emphatically cheapness has been the weapon with which it has fought for supremacy in the world's markets. The inevitable progress and enlightenment of the human race forbade securing this cheapness entirely at the expense of the laborer; the consumer has also had to pay tribute to it. What can be done with worthless cottons can be done with equally poor paper, perhaps the difference between the past and present being that civilized countries will no longer tolerate the fiction. The sooner the British consumer arrives at the same mind the better it will be for the home market, the value of which at least Englishmen are slowly learning.

PERHAPS by following up this train of thought some explanation might be found for the depressed condition of the paper trade of Great Britain. On the surface of things there seems no reason for the continual troubles and falling off in manufacturing when the world's needs are increasing. The industry in Ireland presents a sorry aspect, but scarcely an English paper trade journal comes to hand which does not record the closing or failure of important concerns in various parts of the United Kindom, so that the stagnation seems general. America's facilities for raw materials are great, but she imports quantities nevertheless. Germany and other European countries are equally rich in raw material, and labor there is inhumanly cheap; they are practically at the door of Great Britain whose ports are wide open to foreign producers of finished products as well as of raw material, be it said; consequently the country is flooded with paper products from the continent which successfully compete with home manufactures because they are confessedly the results of labor conditions which English workingmen cannot tolerate. Does not this explain, in part at least, the anomalous condition of British paper making? These conclusions are drawn from statements and complaints of Englishmen themselves—the utterances of the trade all along the line. Might not a wise system of protection to home industries ameliorate the conditions complained of somewhat? Might not a little imitation of American methods in this respect also be a good thing for the British manufacturer?

REGARDING the eight hour day, it is one of those matters which adjust themselves eventually. Such agitations are always met with pessimistic howls like those which the English paper maker desired to let off in the House of Commons. yet trade and manufacturing have survived them all, and no doubt will to the end of time. The invention of labor saving devices is constantly displacing numbers of men; it is useless to tell them to enter other fields, for everywhere machinery is cutting wide swaths in human ranks. This march of invention would be unbearable if the balance between production and consumption could not be maintained—disastrous alike to capitalist and laborer. Whether this balance will be found in shorter hours cannot now be fully predicted; but it seems likely. The question has to be settled, for with the advent of electricity we seem to be only in the dawn of mechanical possibilities. The best way is to face the problem courageously. At the same time it is one of those issues which require thoughtful consideration and will call upon manufacturers for united action. Herein lies the greater difficulty. When a question of trade policy arises, whether raised by the employees or excited by other conditions, those most interested are "at sixes and sevens." It is impossible to bring the trade to a common basis or to meet and discuss affairs, except emergencies dire and threatening and generally afflictive seem to be imminent, and even then there is halting, confusion and divided opinion which suggests nothing so much as the distrust which different men in the same line of business seem to think is essential in dealing with each other. A broader gauge is needed in these days of advanced ideas, and when this is once entered on, if it ever shall be, the world of commerce will be better for it.

Watermarks.

BY DANDY.

A paper maker has struck a new line of business. In a lawsuit recently a document which purported to have been drawn in 1881 was offered in evidence. It was submitted to him. He tested the paper, found that it contained unbleached sulphite, and then testified that there was something wrong, as unbleached sulphite was not used by paper makers until 1884. Whereupon the attorney who offered the paper withdrew it, and the attorney on the other side paid the paper maker $50.

The paper maker says that it took him fifteen minutes to do the business, and that the recompense was much more proportionately than he can get out of the paper business. I guess that he is right.

The amended tariff bill with which the United States Senate is now wrestling at the rate of a few lines a day states that on "blankets, hats of wool, and felts for paper makers' use, "there shall be paid a certain rate of duty," provided that on blankets over 3 yards in length the same duties shall be paid as on woolen and worsted cloths."

Now if the "irrefragable supersapience" which evolved this measure means that all paper makers' felts over 3 yards in length are to pay the same duties as woolen and worsted cloths, then all imported felts will have to meet this "ante," for up to date there are no paper machine felts which are not over that. The smallest of them is 12 feet long, and I guess that the majority are 24 feet in length.

It is a great thing to be a member of Congress and to be able to exploit in a tariff bill what you don't know.

At the "Old Guard" banquet recently George Hoey, of "A Parlor Match" fame, contributed a "pome," in which he referred to various members of the organization. At one place he freed his mind thus:

"Your Second Lieutenant, William D. May
—the one man his comrades WOULD pick,
A paper man strangely not made out of pulp—a big mason who can't lay a brick."

A fellow in the trade recently asked for a quotation on "Manchester Canal water, strictly free from No. 1 Gunny." I wonder if such an article could be packed?

The "Steward" and his partner were last Saturday the guests of a Camden paper maker, enjoying a planked shad dinner on the Duke of Gloucester's domain. Judging from the "Steward's" present condition, I should say that he had slid down the plank in order to get the shad.

Among the other things in the cargo of the ship Bangalore which arrived here this week were forty-three bales of Chinese rags. It was at first decided not to allow the rags to land, as they were unaccompanied by a certificate, but as the vessel had a clean bill of health the objection was finally waived. The consignee says that he does not know the color of the rags. Neither do I, but I'll wager that they will be blue before long.

In the latest issue of *Puck*, which Mrs. Partington so felicitously pronounced "Puke," appears this paragraph, evidently cut out of the hole cloth of dilapidated American humor:

PAPER MANUFACTURER—"It is now possible, sir, to cut down a growing tree and turn it into paper within twenty-four hours!"

GREAT EDITOR—"That's nothing! Why, our dramatic man frequently has his criticism in type before the play begins."

One of the liveliest of Michigan newspapers tells of a man who for several days had been loafing around a Detroit business neighborhood. At last a merchant said to him:

"I've noticed you about here for some time and I don't like it. You look like a pretty decent sort of fellow and you ought to get employment."

The party grinned knowingly.

"I've got employment," he replied.

"You don't act like it."

"I've got it, just the same."

"What is it?"

"I'm employed as one of the 'unemployed,' and I git a dollar a week and board. What's the matter with that for a job?"

The merchant was too paralyzed to coherently reply to such a stunning question. He had been struck speechless by the worst job lot of the professional unemployed brotherhood.

In a certain city there is an Episcopal church which supports two mission chapels, one located in that part of the city known as the "North End," and the other in a section called the "East End." On a recent Sunday the rector of the church in a full round tone, and with that dignity of which high church ecclesiastics only are capable, made the following announcement: "There will be services at the 'North End' mission chapel this afternoon at 3 o'clock, and at the 'East End' at 5 o'clock. Children will be baptized at both ends."

A paper maker ran for mayor in a Western town and was defeated. That's Strange.

Communications.

Use of Rosin on Belts.

Editor of The Paper Trade Journal:

I agree with "J. F. C." in the main about the use of rosin on belts. It should be avoided if possible. If a belt is too slack it should be taken up. This is the wisest thing to do. Sometimes, however, a belt which is not slack will slip on the pulley from the fact that it is overloaded and not equal to the work it has to do. It is in cases like this where rosin is sometimes used, but when it produces the result indicated by "J. F. C." it is when the rosin has not been "powdered." A small sprinkling of rosin dust, say from the perforations in a pepper duster, will answer all purposes and not cause the deleterious effects predicated by "J. F. C." J. H.

The Landslide in Canada.

GLENFORD, May 14, 1894.

Editor of The Paper Trade Journal:

Allow me to correct a mistake in your Canadian News. The mill which was buried by the landslide was one of Mr. Gorrie's pulp mills. We are sorry for our neighbor, but are glad to say that we are still to the fore and above ground. We are built on the solid rock and expect to stand until the crack of doom. Mr. Garrie's mill was a stone building, but 150 feet depth of clay and sand swept over it and wiped it out completely, covering the falls which were 110 feet high, and now there is now there is no sound of water about the place. There were four lives lost and ten houses were wrecked. JOHN FORD.

Trade Talks.

E. L. Embree, Treasurer of the Columbian Paper Company, Buena Vista, Va.—Yes, general business is slow, and so is the paper trade. Our mill has been kept running in good shape, and we have been having a steady supply of orders. We are making a fine grade of soda fibre, and it is going into consumption right straight along. It is recognized as being of good quality, and there is a demand for it.

Changes, Removals and New Firms.

D. W. King, publisher, Tekoa, Wash., has sold out.

Lore & Frederick, publishers, Pitkin, Col., have dissolved partnership.

Smith & Wilcox, job printers, San José, Cal., have dissolved partnership.

C. Braund & Co. have started in the stationery business at Victoria, B. C.

The *Tribune* Publishing Company, Pullman, Wash., has been incorporated.

A. B. Stockham & Co., publishers, Chicago, Ill., have dissolved partnership.

Hooker, Bell & Hooker, publishers of the Waupun *Times*, Waupun, Wis., have sold out.

S. J. Small, publisher, Casselton, N. Dak., has been succeeded by W. M. Potter & Son.

An order has been granted to wind up the business of the J. E. Bryant Company (Limited), printer, publisher, and bookbinder, Toronto, Ont. E. R. C. Clarkson has been appointed provisional liquidator.

J. H. Elliott, publisher, Farmington, Wash., has removed to Tekoa, same State.

J. C. Holmer, publisher of the *West Michigan Independant*, Holland, Mich., has sold out.

H. Howell, publisher of the *News*, Mission City, B. C., has been burned out; partly insured.

Bonner & Randolph, stationers, &c., Troy, Tex., have been succeeded by Zimmerman & Thompson.

J. R. Bloom, publisher of the Fond du Lac *Journal*, Fond du Lac, Wis., has removed to Menasha, same State.

The Brett Lithographing Company, of New York, has been incorporated with a capital of $40,000, and directors, J. Worrall Arthur and Henry H. Arthur, of New York, and Adam Seabury, of Hempstead.

Wing & Evans, importers of chemicals, New York, have removed from 54 William street to 22 William street, where they occupy the greater part of the fifth floor of the Farmers' Loan and Trust Company's new building.

The Roscoe-Rockland Publishing Company, of Roscoe, N. Y., has been incorporated to publish the Roscoe-Rockland *Review*. Capital, $1,000, and directors, M. N. Dodge and J. W. Johnston, of Rockland, and A. T. Finch, W. W. Gregory and E. Sprague, of Roscoe.

The Buffalo *Volks Freund* Printing Company has been incorporated to publish a newspaper and transact a printing business in Buffalo, N. Y. Capital $15,000, and directors, Edwin G. S. Killer, George Baldus, Jacob J. Lang, Frank J. Ilig and others of Buffalo.

The North American Foreign Trade Publishing Company, of New York, has been incorporated to publish a directory of importers and exporters of the United States and Canada. Capital, $5,000, and directors, Arthur H. Mackenzie, Isaac H. Blanchard and Drew B. Allen, of New York city.

The firms of Hill Brothers & Co. and A. C. Sneed & Co., stationers, &c., Waco, Tex., composed of B. H. Hill, N. S. Hill and A. C. Sneed have been dissolved by mutual consent. B. H. Hill and N. S. Hill assume all liabilities of the firm of Hill Brothers & Co., and all amounts due said firm are payable to them. They will continue in business at the former stand of Hill Brothers & Co., No. 325 Austin avenue, under the firm name of Hill Brothers. A. C. Sneed assumes all liabilities of the firm of A. C. Sneed & Co. and all amounts due said firm are payable to him. He will continue in business at the former stand of A. C. Sneed & Co., No. 403 Austin avenue, under the firm name of A. C. Sneed & Co.

Failures.

Hubert E. Rogers has been appointed receiver for the Lincoln Press, printer, at Bowery and Spring street, New York, on the application of Martin Lynk, a judgment creditor.

The Toledo Paper Company, paper dealer, Toledo, Ohio, has failed with liabilities of $6,166. The firm was composed of Mary B. Richardson and Louise K. Fink, who have made an assignment.

Frank B. Hobart, dealer in twines and cordage, at No. 92 White street, New York, whose store was seized by the sheriff on Wednesday, made an assignment on Thursday, to Henry C. Kelley, giving a preference for $3,269 to the A. H. Hart Company.

The National Broadway Bank of New York, Wednesday, entered judgments against the Hovenden Company for $9,861, Empire Publishing Company, $2,803, and the Seaside Publishing Company, $2,587, on notes which were indorsed by the United States Book Company and Horace K. Thurber.

Fires.

E. M. Comstock, dealer in wall paper, Conneaut, Ohio, has had a loss by fire.

Louis M. Brown, publisher, Hammondsport, N. Y., has been damaged by fire.

At Fond du Lac, Wis., May 15, the stock of Union Paper Box Company damaged $3,000 by fire.

Kenner Brothers, booksellers and stationers, Bowmanville, Ont., have been burned out.

The Holman Paper Box Company, St. Louis, Mo., was burned out on May 12. Loss $10,700; insured for $26,750.

The mill of the Haldeman Paper Company, Lockland, Ohio, located on the canal in the lower end of the village, was completely destroyed by fire on May 12. The fire spread very rapidly, consuming a number of stacks of hay around the building and attacking the iron boiler and engine room further up the canal, which although constructed of corrugated iron was razed to the ground. The loss, which amounts to

about $35,000, is divided as follows: On buildings, $10,000; on boilers, engines and pumps, $13,000; on machinery, $12,000. The insurance is $20,800. The engineer, who remained at his post sounding an alarm for help, came near losing his life, escaping as the timbers fell about his head. The structure which was burned was an old land mark in Lockland, having been built seventy years ago by a man named Burnett. It was first used as a hominy mill. The remainder of the plant was erected in 1860 by Bachelor, DeCamp & Co., and in 1863 was purchased by DeCamp, Haldeman & Co. The Haldeman Paper Company became the owners in 1868 at the same time that it bought the other plant known as the upper mill.

The American Roll Paper Company, St. Louis, Mo., was burned out on May 14. Loss, $3,600; insured for $9,000.

The paper mill of William Kingston & Sons, Little Falls, N. Y., was burned on May 12. Loss, $35,000; no insurance.

Edward A. Capen & Co., stationers, 100 William street, New York, were damaged by fire May 15. Loss, $1,000.

A fire which broke out in the mill of the California Paper Company, Stockton, Cal., on May 2, was extinguished before much damage was done.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
Lothrop Publishing Company, Boston, Mass.	$60,000
W. W. Knight & Co., Worcester, Mass.	2,500

MIDDLE STATES.

Gustav Widman, Newark, N. J.	5,000
Neilsen Manufacturing Company, Troy, N. Y.	700
George E. Satchwell, Watertown, N. Y. (Real)	1,700

WESTERN STATES.

Mayne C. P. Parker, Indianapolis, Ind.	2,026
E. S. Ennis, Barnes, Ia.	116
John L. Clarke, Ida Grove, Ia. (B. S.)	4,250
—— Ferguson (Ferguson & Terrell), Jefferson, Ia. (B. S.)	2,500
G. S. Terrell, Jefferson, Ia	300
G. S. Terrell, Jefferson, Ia.	2,000
C. H. Swallow, Leigh, Neb.	100
J. F. Pryble, Omaha, Neb.	375
W. L. McMillan (McMillan & Wilcox), Red Cloud, Neb.	500
E. V. E. Rausch, Toledo, Ohio (R.)	471
Toledo Paper Company, Toledo, Ohio	1,730
Toledo Paper Company, Toledo, Ohio	500
G. W. Hopp, Pullman, Wash.	175
Triesch Brothers, Uniontown, Wash.	2,500
J. J. Beeson (*Independent*), Vancouver, Wash.	500
J. J. Beeson (*Independent*), Vancouver, Wash.	700

SOUTHERN STATES.

S. H. Welborn, et al., Louisville, Ky. (Real)	600
O. M. Gilmer, Carrollton, Mo.	1,650
John Hark, Sedalia, Mo. (Real)	800

Personals.

Leon Gottheil, of Castle & Gottheil, who has been abroad for some time, will sail for home to-day on the Lucania.

George Pauline, of Robert Fletcher & Son, Kearsley Paper Works, England, who has been on a business trip to this country, sailed for home to-day on the Campania.

Thomas C. Bennett, broker in paper makers' supplies, has taken the office at 36 Beekman street, formerly occupied by Train, Smith & Co. He has fitted it up in handsome style, and will be pleased to have his friends in the trade call on him.

Accidents.

On May 8, Coke Platt employed at the Stratford (Del.) Paper Mills, was seriously scalded by the bursting of a hot water pipe.

There were several accidents at the works of the Poland Paper Company, Mechanic Falls, Me., on Wednesday. Elba Edgecomb, a young man about twenty years old, caught his left hand in the gearing and it was so badly crushed that the amputation of three fingers was necessary. He also suffered several painful cuts and bruises about the head. Later Roland Harmon was caught in a belt and thrown down. He was picked up insensible and found to be cut about the head and shoulders. E. E. Jordan, also an employee of the company, received a painful wound, a large spik, falling on his foot and nearly penetrating it.

In Town.

A. N. Burbank, W. T. Barker, Colonel Fairchild, Edwin Lindsay and H. M. Whitney, Boston, Mass.; G. W. Russell, Lawrence, Mass.; J. M. Johnston, Middletown, Ohio; A. D. Remington, Watertown, N. Y.; T. Warren Manning and Frank Gilbert, Troy, N. Y.; Thomas Duncan, Hartford, Conn.; A. W. Eaton, Lee, Mass.; C. H. De Lano, Ticonderoga, N. Y.; E. L. Embree, Buena Vista, Va.; J. A. Kimberly, Appleton, Wis.

General Notes.

Secretary of the Interior Hoke Smith has awarded the printing of the *Patent Office Gazette* to the Norris Peters Company, which held it for a number of years consecutively up to last year.

Giorgianna Taylor has been appointed receiver for the firm of Taylor & Keffel, fashion publishers, at No. 103 West Fourteenth street, in a suit brought to dissolve the partnership.

The Springfield Envelope Company, Springfield, Mass., has been awarded the contract for supplying the House of Representatives at Washington with envelopes for the ensuing year.

Sealed proposals for supplying toilet paper and toilet paper fixtures for the United States public buildings east of the Rocky Mountains, will be opened at the Treasury Department, Washington, D. C., on June 15.

The sheriff has received an attachment for $4,796 against the Otis Falls Pulp Company, manufacturer of wood pulp and paper at Livermore Falls, Me., in favor of Frederick Bertuch & Co., of this city, for balance claimed to be due on purchases of unbleached sulphite pulp. The attachment has been served in two places.

The petition of William G. McCrea for the removal of Arthur G. Bedell as receiver of the North Side Publishing Company, New York, has been denied by Justice Lawrence in the Supreme Court. McCrea's petition alleged that Bedell had sought the appointment from sinister motives and was incompetent. This was denied in affidavits by the Attorney-General, who appointed Bedell.

The Nashua Card and Glazed Paper Company, Nashua, N. H., has got out three sample books of enameled book papers, surface coated papers and card boards, respectively, of its manufacture. These all show elegant lines of goods, such as will challenge the admiration of buyers. They are valuable adjuncts to business. Illustrations giving exterior and interior views of the company's works are interleaved with the samples.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, May 18, 1894.

THE MONEY MARKET.—The stock market is quiet and most of the moving shares closed at lower figures. There was no change in the condition of the loan market, the tone being easy at 1 per cent. for call contracts, and renewals at 1@1½ per cent. The offerings were large, the business done representing chiefly the placing of bankers' balances. The better volume of business in stocks in the last two days has led to a slightly larger inquiry for call loans. Time loans were easy for short terms and steady to firm for long dates Brokers quote rates about 1½@ 2 per cent. for thirty to sixty days, 2½ per cent. for ninety days and 3 per cent. for longer dates. Banks report that choice commercial paper continues in poor supply. Paper not so well known is offered in considerable amounts. A few sales at 2½ per cent. for best receivables are reported, but the usual quotation is 3@3¼ per cent., best single names, 3½@4 per cent., and others 4@6 per cent. The market for sterling was firm in tone at rates current all this week, and at which gold may be exported at a profit if there are remittances to be made. Business was not active. Continental sympathized closely with sterling, commercial bills being scarce all along the line. Posted rates were $4.88½ for sixty days and $4.90 for sight. Actual rates were 4.87¼@4.87½ for sixty days, and $4.88¾@4.89¼ for sight.

THE PAPER TRADE.—One hears a large volume of complaint nowadays as to the condition of business from manufacturers and dealers. Small orders are the rule and everybody is keeping stocks in as snug condition as possible. As a rule mills are not making stock and are running only on orders, and when these are not in hand the machines are stopped. Prices slip a little, and in most cases makers are ready to concede something in order to secure a run. However, there is very little forcing being done, it being recognized pretty generally that the cutting of values at present will not increase the consumption. Some mills are being bothered by the coal strike, and some machines have been stopped because of lack of coal.

JUTE BUTTS.—The market is very quiet and no important transactions have taken place. Prices are unchanged.

WOOD PULP.—The market for Ground Wood is quiet, but prices hold very well. Some more cargoes for export are being arranged for.

WOOD FIBRE.—There is a fair movement, but the market is not active. Domestic Soda is quoted at 2¾@3¼c. for Bleached. Domestic Sulphite is quoted at 2¼@2½c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.25c.; Bleached, do., 4@4½c.; Bleached Straw Pulp, 4@4¼c. Imports of Chemical Fibre this week aggregated 168 tons, being 45 tons from Hull. 30 tons from Rotterdam, and 93 tons from Stettin.

FOREIGN RAGS AND PAPER STOCK.—The market is very quiet. Small lots are moving, and some special grades of linens have met with some sale. Prices, however, continue to be very low. Imports for the week aggregated 4,340 bales and 168 tons, being 725 bs. rags, 97 bs. papers, 168 tons chemical fibre and 3,518 lbs. manillas. Ports of shipment and quantities are as follows: Antwerp, 1,338 bs. manillas; Bremen, 23 bs. manillas; Hamburg, 309 bs. rags; Hull, 86 lbs. rags, 45 tons chemical fibre, 1,946 bs. manillas; Liverpool, 70 bs. manillas; London, 220 bs. rags, 97 bs. papers; Nassau, 12 bs. rags; Rotterdam, 98 bs. rags, 30 tons chemical fibre and 51 bs. manillas; Stettin, 93 tons chemical fibre and 90 bs. manillas.

DOMESTIC RAGS.—The market for domestic rags is quiet, but prices are about the same. No. 1 City Whites rule at 3¼@3½c. delivered, Soiled Whites at 2½@2¾c., and No. 2 at 90@1½c., with sale of 50 bs. at 1½c.

BAGGING, &c.—The market for Gunny is weak, and while 1.10c. is quoted this would probably be shaded on an order for a round lot. Manilla imports for the week aggregated 3,518 bales, being 1,338 bs. from Antwerp, 23 bs. from Bremen, 1,946 bs. from Hull, 70 bs. from Liverpool, 51 bs. from Rotterdam and 90 bs. from Stettin.

OLD PAPERS.—Small lots are moving in a fair way. We quote: No. 1 Hard White Shavings, 2¾c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1⅞@2c.; Old Ledgers, 2.10c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1.20@1.25c.; Mixed Shavings, No. 2, ¾@1c.; Extra No. 1 Manillas, 1.15c.; No. 1 Manillas, ordinary, .80c.; No. 2 Manillas, .60c.; Light Book Stock, 1½c.; Folded News, .40c.; Mixed Papers, .40c.; Commons, 25@30c.; Straw Clippings, .45@.50c.; Binders' do., .50c.

STRAW.—Market is steady. We quote: No. 1 Long Rye at 65c.; No. 2 Long Rye at 50@60c.; Short Rye at 45@50c.; Wheat at 40@50c.; Oat at 45@50c.

ROSINS.—Rosins are quiet, but low grades are firmer. We quote: Common to Good Strained, $1.47½@1.55; E, $1.60; F, $1.80@1.85; G, $2.05; H, $2.30@2.35; I, $2.55@2 60; K. $2.80; M, $3.15@3.20; N, $3.25@3.30; W. G., $3.50.

CHEMICALS.—The market for paper makers' chemicals is dull. Under date of May 2, J. P. Brunner & Co. speak of the Liverpool market as follows: "The chemical trade continues in a depressed condition, and there seems to be no indication at present for any immediate improvement. Soda Ash is dull, and for Leblanc makes prices vary according to export market, the nominal spot range being about as follows: Caustic Ash, 48 per cent., £3 15s.@£4 per ton; 57@58 per cent., £4 10s.@£4 15s. per ton; Carbonated Ash, 48 per cent., £3 5s.@£3 15s. per ton; 58 per cent., £3 15s.@£4—net cash. Ammonia Ash, 58 per cent., still keeps low, and is quoted at from £3 10s. to £3 15s. per ton, net cash, for tierces, and 5s. less for bags. Soda Crystals move but slowly at £2 13s. 9d.@£2 15s. per ton, less 5 per cent. Caustic Soda is weak and orders scarce. Quotations vary considerably according to export market, and nominal spot range is about as follows: 60 per cent., £7 15s.@£8 5s. per ton; 70 per cent., £8 15s.@£9 5s. per ton; 74 per cent., £9 15s.@£10 5s. per ton; 76 per cent., £10 15s.@£11 5s. per ton—all net cash. For parcels under 10 tons, 5s. per ton extra is charged. Bleaching Powder is in good request, and prices vary from £7 10s to £8 5s per ton net cash for hardwood packages according to market." Bleaching Powder is quiet on spot, but there is some business being done in shipments. Caustic Soda is in better movement. Alkali is in small demand, and Sal Soda is meeting with a moderate trade. During the week there have been sales of 40 casks Bleach at 2¼c.; 25 tons Soda Ash at 1½c.; 50 tons 58 per cent. Alkali at 1.15c.; 50 drums Caustic at 2¾@2.80c.

CHINA CLAY.—The demand is very light, the paper trade being in good supply. In a consuming way a fair week's distribution was accomplished, although composed solely of the smaller parcels.

TWINES.—The market is quiet. We quote: Sisal Hay Rope, 6¼c.; Sisal Lath Yarn, fine, 9¼c., and medium, 9¼c.; Jute Lines, 6½c.; Jute Ready, 6c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¾c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c.; Russian Hemp Hay Rope, 9c.

COAL.—Anthracite is unchanged. It is reported dull at Chicago, where Soft Coal is scarce, but so far most of the operators appear to be more or less able to take care of their regular trade. Altogether the supply at the West is not so low that the buyers are in what may be called a tight place. At the East there is plenty of Soft Coal to go around for a little while yet, and if it should give out there is Anthracite to fall back upon. In fact there is no immediate danger of a scarcity of Soft Coal.

EDWIN BUTTERWORTH & CO.,
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
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OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
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WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.
ORISKANY, N. Y.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	85	@	1.00
White tissue, 24×36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6½
Manillas, No. 1, heavy weight	6¼	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2½	@	3½
Wrapping Parchment	16	@	30
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	24.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	85	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	72
24×36, from 24 to 26 lbs. ℔ rm	....	@	60
22×32, from 24 to 26 lbs. ℔ rm	56	@	....
20×30, 21 lbs., ℔ rm	....	@	44
20×30, from 14 to 17 lbs. ℔ rm	36	@	....
16×22, from 12 to 13 lbs. ℔ rm	28	@	....
18×28	....	@	32
15×20, 10 lbs. ℔ rm	17	@	19
15×20, from 7 to 8½ lbs. ℔ rm	17	@	19
14×18	....	@	15
12×16	....	@	13
11×15	....	@	11
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12×18	18	@	20
14×20	22	@	....
Card Middles, ground wood	5¼	@	6¼
Card Middles, long fibre wood	8¼	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	5½	@	6
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4	@	4¼
City Whites, No. 1	3¼	@	....
New Seconds, light	2¼	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	¾	@	1.15
Cotton Canvas, No. 1	3½	@	....
Linen Canvas, No. 1	....	@	3
Country Mixed, free of Woolens	60	@	75
Seconds (City)	30	@	50
Colors, ℔ 100 lbs	30	@	40
Manilla Rope	2	@	2¼
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	....	@	1½
Mixed Bagging, No. 1	80	@	90
Burlap Bagging, No. 1	....	@	1¼
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	2½	@	....
Jute Waste	¾	@	1

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3½	@	....
Hard White Shavings, No. 1	2¾	@	3
Soft White Shavings, strictly free from wood	2.15	@	....
Soft White Shavings, ordinary	1⅞	@	2
Mixed Shavings, part white	1	@	1½
Ledger and Writing	2	@	2.10
Solid Stock	....	@	1¼
Book Stock, No. 1 light	....	@	1½
Old Newspapers	40	@	....
Manillas No. 1	....	@	1.15
Manillas No 2	80	@	....
Mixed Manillas	60	@	....
Hardwares, No. 1	65	@	....
Mixed Papers	40	@	....
Commons	25	@	30
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	45	@	50

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2½
White and Colored Shavings, No. 1	1¼	@	1½
White and Colored Shavings, No. 2	1	@	1⅛
Cream Post Shavings	2½	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	1¾	@	1¾
Books and Pamphlets	1.10	@	....
Old Newspapers	....	@	....
Broken News and Letters	⅞	@	1
Old Blank Books	2¼	@	2½
White and Buff Railway Sheets	1¼	@	....

Japanese Rags.

Blues, Hiogo	1.45	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1.55	@	1.75
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2½
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¼
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	2¼	@	....
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.75	@	2.80
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.47½	@	1.55
Rosins, E, ℔ bbl	....	@	1.60
Rosins, F, ℔ bbl	1.80	@	1.85
Rosins, G, ℔ bbl	....	@	2.05
Rosins, H, ℔ bbl	2.30	@	2.35
Rosins, I, ℔ bbl	2.55	@	2.60
Rosins, K, ℔ bbl	2.80	@	....
Rosins, M, ℔ bbl	3.15	@	3.20
Rosins, N, ℔ bbl	3.25	@	3.30
Rosins, W G, ℔ bbl	3.50	@	....
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℔ cent	1	@	1½
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5½
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	4	@	....
No. 2 Whites	3	@	2¾
Common Seconds	2	@	2¾
Thirds and Blues	1	@	1.20
Southern Mixed Rags	80	@	1
Colors, country	½	@	¾
Colors, city	25	@	80
New Calicoes, light	2	@	2½
New Calicoes, dark	1½	@	1½
Shirt Cuttings, best	4½	@	5
Shirt Cuttings, good	4	@	4½
Shirt Cuttings, unbleached	4	@	4½
Shirt Cuttings, unbleached No. 2	....	@	3
Shirt Cuttings, cheviots	3	@	3¼
Overall Cuttings, blue	....	@	3
Overall Cuttings, brown	2	@	2½
Shoe Rags, bleached	3½	@	4
Shoe Rags, unbleached	3½	@	3
Shoe Rags, brown	3	@	....
Cotton Flannels, bleached	3½	@	4
Cotton Flannels, unbleached	3½	@	....
Corset Rags, drab	3½	@	....
Corset Rags, white	4	@	....
Tailors' Seconds	1¼	@	1½
Tailors' Colors	25	@	....
Cotton Canvas	....	@	3
Cotton Canvas, No. 2	....	@	1½
Linen Canvas	1½	@	2
New Canvas Cutting	4	@	4½
Insole Canvas	3	@	3½
Print Papers, best	35	@	40
Print Papers, ordinary	30	@	35
Folded News	35	@	40
Old Waste Papers	15	@	20
Manilla Paper, No. 1	1.30	@	1.35
Manilla Paper, good mixed	90	@	....
Manilla Paper, blues	75	@	....
Mixed Book Stock	1	@	....
Books and Pamphlets	1½	@	1½
Book Stock, light	¾	@	1
Ledgers and Letters	1¾	@	2½
Soft Book Shavings	1¾	@	2
Hard White Book Shavings	2½	@	2¾
Leather Board Chips	75	@	80
Straw Chips	45	@	50
Shivey Bagging	1½	@	....
No. 1 Factory Bagging	1	@	1⅛
Burlap Bagging	85	@	1
Burlap Bagging, large pieces	85	@	1¼
Kentucky Bagging	1½	@	2
Mixed Bagging	⅞	@	....
No. 2 Bagging	½	@	⅝
Shakings, soft	½	@	....
Tarred Shakings	1	@	1½
Standing Rigging	3	@	....
Standing Rigging, foreign	2½	@	....
Bolt Rope	2	@	....
Oakum Junk, No. 2	1½	@	1½
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	¾	@	....
Manilla Rope	2	@	2.15
Tarred Manilla	1½	@	....
Hemp Strings	1¾	@	2
Sisal Strings	80	@	1
Wool Strings	90	@	1.10
Flax Tow	¾	@	1
Flax Waste	¾	@	1

New Papers.

Superfine Book	6	@	7
Fine Book	5¼	@	6
News, rag and wood	3	@	....
Manilla, Cream Rope	9½	@	10
Manilla, No. 1, Rope	7½	@	8½
Manilla, Extra Jute	5½	@	6
Manilla, Jute and Gunny	5½	@	6
Manilla, No. 2	4	@	4½
Manilla, Bogus	2	@	3
Hardware, No. 1, tarred	7½	@	8½
Hardware, No. 2	6½	@	7
Hardware, red	4½	@	5½
Strawboards, air dried, ℔ ton	37½	@	45.00
Strawboards, steam dried, ℔ ton	30.00	@	35.00
Straw Wrapping, heavy	1.90	@	2¼
Straw Wrapping, light	2½	@	2¾
Binders' Boards, ℔ ton	45.00	@	50.00
Leather Board, Common, ℔ lb	3	@	4
Leather Board, counter	5	@	8
Leather Board, extra	8	@	10
Tar Boards, ℔ ton	100.00	@	110.00

Chemicals.

Alkali	1.00	@	1.10
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	....	@	1.95
Alum, American lump	....	@	1.85
Anti-Chlorine	2	@	2½
Bichromate Potash, American	10	@	....
Bleaching Powders	2½	@	2¾
Blackley Blue	2.00	@	3.00
Caustic Soda, 74 ℔ cent	....	@	2.65
Clay, English, ℔ ton	14.00	@	18.00
Clay, American, ℔ ton	10.00	@	11.00
Copperas, ℔ lb	65	@	75
Extract Logwood	5½	@	11½
Lime, Rockland, ℔ bbl	90	@	....
Prussian Blue, ℔ lb	50	@	60
Prussiate Potash, American, yellow	22	@	22½
Prussiate Potash, red	38	@	38½
Rosin, common strained, ℔ bbl	1.90	@	2.50
Rosin, Medium	2.20	@	3.00
Rosin, extra pale, ℔ bbl	3.00	@	4.50
Sal Soda, English, ℔ lb	1.00	@	1.05
Soda Ash, 48 ℔ cent, caustic	1.40	@	1.60
Soda Ash, 48 ℔ cent, carbonated	1.37	@	1.50
Soluble Blue	55	@	65
Sugar Lead, white	11	@	12
Sugar Lead, brown	5½	@	6
Sulphuric Acid, 66°	¾	@	1¼
Terra Alba, ℔ ton	15.00	@	20.00
Ultramarine, ℔ lb	12½	@	15
Venetian Red, ℔ lb	1¾	@	2¼
Vitriol, Blue	3½	@	3¾
Yellow Ochre	½	@	1

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

WANTED—SITUATION AS SUPERINTENDENT or foreman in book, news or manilla mill; accustomed to all grades of stock and colors; good reference. JORDAN, care Journal.

WANTED—SITUATION AS MACHINE tender; run all kinds of stock; run Fourdrinier, cylinder or Harper; best references, if required; state wages. B. B., care Journal.

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PAPER MILL WANTED—WILL LEASE, with right to purchase; must be located on a railroad and have good water power; give full particulars, location and price. RESPONSIBLE, care Paper Trade Journal.

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SITUATIONS WANTED BY FIRST-CLASS superintendents, machine tenders and engineers; worked on all grades of paper; both slow and fast running machines; can furnish best references if required. Apply to EAGLE LODGE No. 1, Brotherhood of Paper Makers, Box 672, Holyoke, Mass.

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Four 1,000 pound Umpherston Beating Engines, complete, with patent copper washers, sand traps, &c. Engines in first-class condition and now running, but to be taken out to make room for other machinery. Address UMPHERSTON, care of Paper Trade Journal.

TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1894.

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Fourdrinier Machine. New and Modern; wire, 92 inches wide, 45 feet long; forty 2½ inch table rolls, three brass suction boxes; gun metal and rubber press rolls; thirteen dryers, 48×88; nine stack calenders, reels, cutter; Manning winder; cone pulley driving train.

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One 84 inch Fourdrinier part to paper machine complete, with Gould screen.

One 74 inch Fourdrinier machine complete, Gould screen; gun metal press rolls, 15x75 inches; eight iron dryers, 36x72 inches; stack of nine chilled rolls, 72 inch face; upright reel and cone pulley cutter; Bess slitters.

One Gould screen, eight plates, 10x36 inches.

One Gould screen, eight plates, 12x40 inches.

One Barber's suction.

One 70 inch machine complete, Gould screen, Fourdrinier wire, 70x33 inches; first and second presses; eight iron dryers, 36x65¾ inches; stack five chilled rolls, four 12 inches, one 16x64 inches face; upright reel, slitter and winder.

Two new 1,000 pound Holyoke Machine Co. beaters, wood tubs.

One 1,000 pound iron tub beater.

Six beating engines, 36 inch roll, iron tubs.

One 1,200 pound Horne patent engine, new.

One rotary, 7x30, double riveted, 9-16 inch shell.

Three Scott & Roberts hydraulic pulp grinders.

Three Jordan engines.

Two rag cutters and duster.

Four iron dryers, 28x72 inches.

Send for catalogue of machinery, steam engines and boilers.

1,000 feet shafting, 2 to 6 inches diameter; 500 feet belting, 5 to 48 inches wide.

Parties wanting tools, stock or machinery used in a paper or pulp mill can find it here at a bargain.

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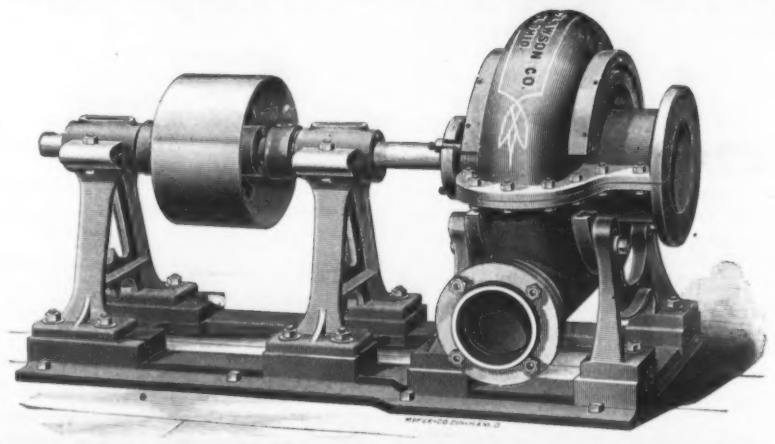

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Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

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A small Digester suitable for experimental work; built by Harrison Loring; length, 5 feet; diameter, 4 feet; shell, 5-16 inch; heads, 1¼ inches; cast iron.

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NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

OLD DOMINION LINE

BETWEEN

NEW YORK

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RECEIVERS' SALE.

Sale of the Entire Assets and Property of the Friend & Fox Paper Company.

COMMON PLEAS COURT, Hamilton Co., Ohio.

GEO. N. FRIEND *et al.*, Plaintiffs, vs. THE FRIEND & FOX PAPER CO. *et al.*, Defendants. } No. 97720.

Pursuant to an order issued by the Court of Common Pleas in the above cause, the undersigned, as receivers, will offer for sale at public auction, the entire assets and property belonging to said company, except the book accounts and bills receivable.

Said assets consist of three paper mills; one located at Lockland, Ohio, one at Crescentville, Ohio, and one at Rialto, Ohio.

The mill at Lockland consists of the mill building, machinery appurtenances water privilege and lease.

The mill at Crescentville consists of the mill building, four dwellings, four acres of land, machinery, appurtenances, water privilege and lease.

The mill at Rialto consists of mill building, fourteen acres of land, eight dwellings, machinery, appurtenances, water privilege and lease.

In addition to the foregoing, the warehouse, one dwelling house, office building and fixtures at Lockland, and the merchandise in the three mills, manufactured and unmanufactured; stock on hand in the warehouse at Lockland and elsewhere; one iron canal boat, one wooden canal boat, four mules and harness; one horse, two wagons and one carriage at the Rialto mill; two horses, two wagons and harness at the Lockland mill, and all other assets and property of said company.

The Rialto mill with its machinery, fixtures, water privilege and lease, fourteen acres of ground and eight dwelling houses, will be offered for sale as an entirety on the premises on Thursday, May 31, 1894, at two o'clock P. M. Immediately after the conclusion of said sale the Crescentville mill, with its machinery, fixtures, water privilege and lease, four acres of land and four dwellings, will be offered for sale as an entirety on the premises. On Friday, June 1, 1894, at two o'clock P. M. in the office of the company at Lockland, Ohio, the Lockland mill, with the ground on which it stands, its machinery, fixtures, water privilege and lease, will be offered as an entirety; thereafter the warehouse and lot, dwelling house, office building and fixtures at Lockland will be offered; also all the other above enumerated assets of said company in lots to suit. At the conclusion of said sales at Lockland all of the assets of said company, except the book accounts and bills receivable, including the three mill plants, will be offered for sale as an entirety.

Additional and detailed information will be furnished by the receivers to any person desiring to bid.

The terms of the sale will be: For the mill plants and other real estate aforesaid one-third cash, balance in four equal instalments in six, twelve, eighteen and twenty-four months from day of sale, with notes bearing interest at six per cent. secured by mortgage on the property sold; for the chattel property one-half cash, balance in notes at six and twelve months from the date of sale, with interest at six per cent. and with approved security. Purchasers may pay all cash. All sales are subject to approval and confirmation by the Court.

EDMOND P. HARRISON, GEO. B. FOX, Receivers.

LOCKLAND, Ohio, May 5, 1894.

THOS. McDOUGALL, Attorney.

BOOKS OF REFERENCE

THE following is a list of Books of Reference on subjects connected with Paper Making, Chemicals, Colors, Machinery, Hydraulics, &c.:

AUERBACH.—Anthracen: Its Constitution, Properties, Manufacture and Derivatives. 8vo	$5 00
BAIRD.—Standard Wages Computing Tables. Folio.	5 00
BENSON.—Principles of the Science of Color. 4to	7 50
BENSON.—Manual of the Science of Color. 12mo	1 00
BESANT.—A Treatise on Hydro-Mechanics. 8vo	5 00
BOX.—A Practical Treatise on Heat as Applied to the Useful Arts. Illustrated by fourteen Plates. 12mo	5 00
BOX. A Practical Treatise on Mill Gearing. 12mo	3 50
BOX.—Practical Hydraulics. 12mo	2 00
BRESSE.—Hydraulic Motors. 8vo	2 50
BROWN.—Five Hundred and Seven Mechanical Movements. 12mo	1 00
CALVERT.—Dyeing and Calico Printing, including an Account of the Most Recent Improvements in the Manufacture and Use of Aniline Colors. With dyed Patterns. 8vo	8 00
CHEVREUL.—The Principles of Harmony and Contrasts of Colors and Their Application to the Arts. Illustrated with Colored Plate. 12mo	3 00
COOPER.—A Treatise on the Use of Belting for the Transmission of Power. 8vo	3 50
CORFIELD.—Water and Water Supply. 16mo	50
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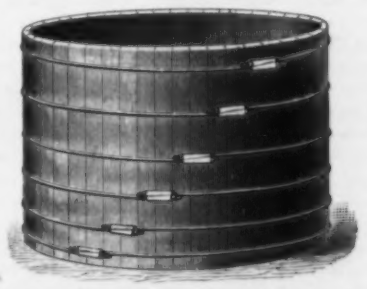

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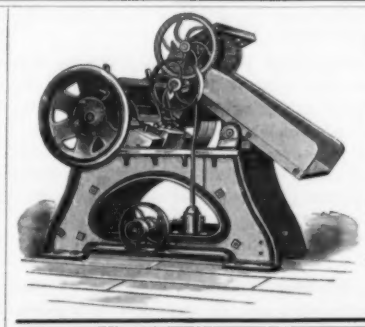

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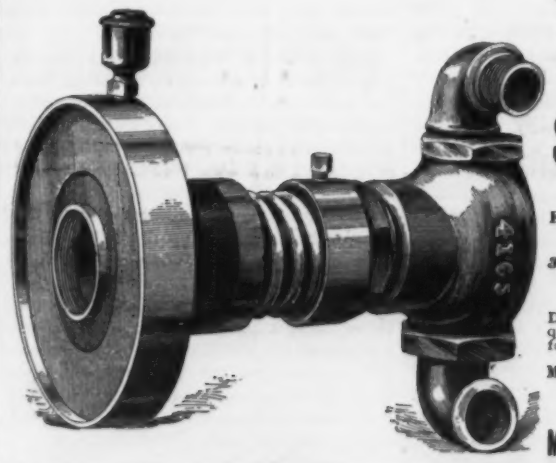

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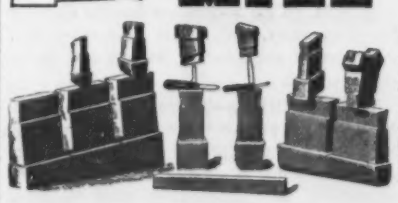

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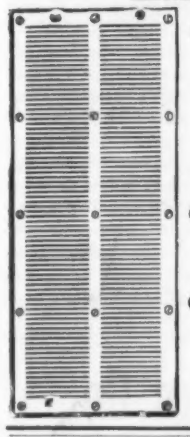

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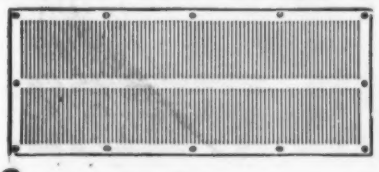

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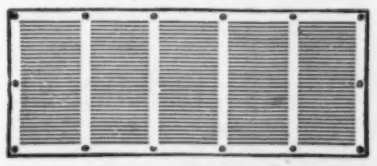

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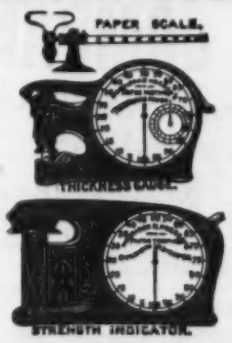

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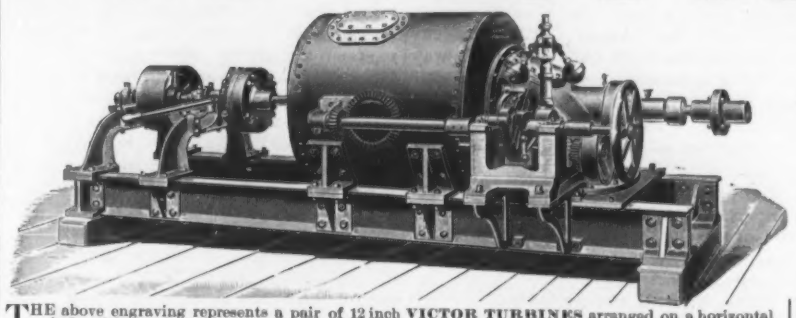

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20 inch	18.21	49.00	.8532
25 inch	17.90	68.62	.8584
30 inch	11.65	52.54	.8676
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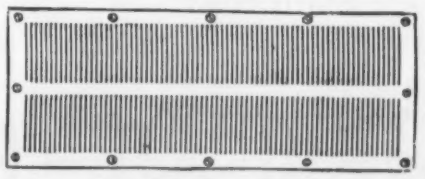

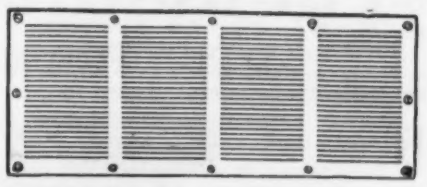

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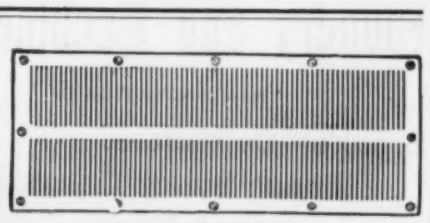

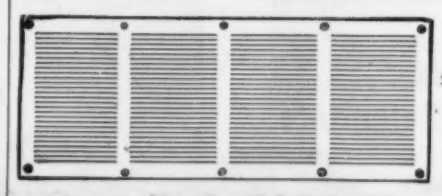

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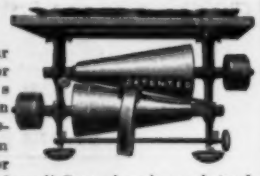

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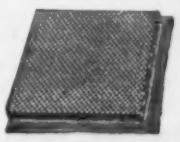

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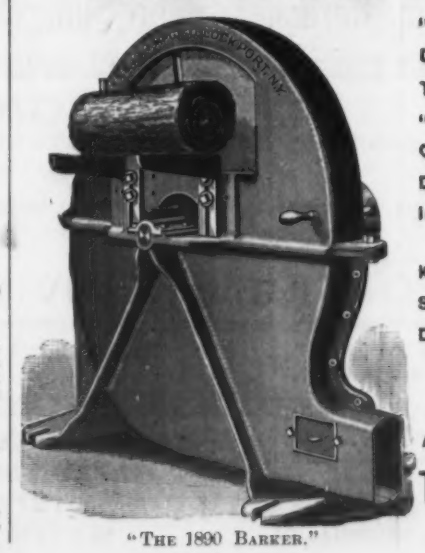

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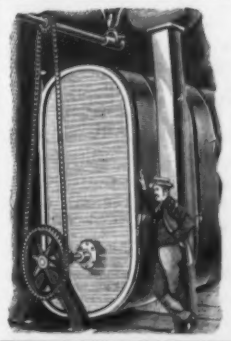

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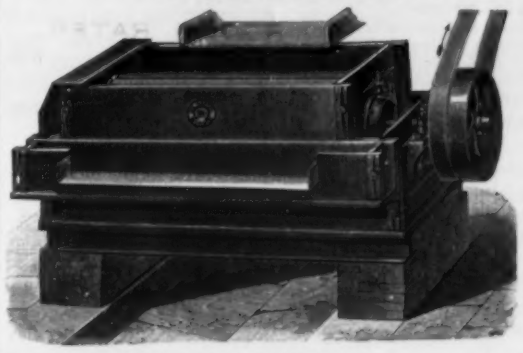

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Unsurpassed straining capacity.
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No contact of the Pulp with iron parts.
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ROUND'S PATENT VIBRATING SCREEN.

An Exceedingly Simple and Efficient Machine. The Cheapest in the Market.

Manufacturing News.

EASTERN STATES.

The Brunswick end of the Pejepscot Paper Company's dam at Jack's Crossing, near Lisbon Falls, Me., went out on May 11, causing a serious loss. Work on the large pulp mill, which has been under construction, and employing a large force of workmen, will be shut down some time. A small dam, constructed to hold back the water, twice before broke away and was rebuilt. The dam will be rebuilt. About 5,000 cords of pulp wood were lost. Total loss, $20,000.

The Smith Paper Company, Lee, Mass., has decided to repair the Columbia mill and put it in order for the manufacture of fine papers. The work will be begun at once, but will not be hurried. It is probable that the mill will be ready for business next fall. Everything will be put in first-class order, and some new machinery will be introduced. Pipes will be laid from the Eagle mill to supply the mill with wash water from Laurel Lake, which is exceptionally pure and clear. The grade of paper has not been decided, but very likely the mill will be put upon copying tissues.

Keeney Brothers, Manchester, Conn., are rapidly settling up their fire loss, and are making alterations for a more thorough fire protection to their mill property.

There is more trouble at Madison concerning the fibre mill of the Manufacturing Investment Company, which has been closed since last June. Early in March a large crew of carpenters began to remodel the structure with the intention of starting it up next month. When the mill was built the town voted to exempt it from taxation for ten years, but when it looked as though the present management was about to make a success of the enterprise the citizens began to discuss the question of taxing the property. The manager says that if a tax is levied he will see the mill decay before he will reopen the doors. This is the mill in which President Cleveland, ex-Secretary Whitney and Daniel Lamont are stockholders.

B. F. & J. L. Perkins, of the Stony Brook Paper Company, South Hadley, Mass., are building a smoke stack and putting in two boilers, one of 80 and the other of 40 horse power.

MIDDLE STATES.

The Fort Miller Paper Mill, Fort Miller, N. Y., was started up last week for the first time since it shut down last winter.

Wagman, Thorpe & Co.'s new wood pulp mill at Fort Miller, N. Y., has been started up. One of the stones in a grinder broke a week ago and a new stone has been substituted.

On May 8, in the Circuit Court at Salem, N. Y., the suit of Sylvester Lackey against the Glens Falls Paper Mill Company, was brought to trial. On November 15, 1892, Lackey sustained a broken leg while working at a barking machine. He affirmed that the paper company had not provided sufficient precautions for the protection of the employees at the machine Damages were laid at $10,000. A non-suit was granted and the complaint was dismissed.

W. A. and W. H. Murphy, of Newark, N. J., who have been at Dansville, N. Y., looking at the Whiteman Pulp Mill property with a view of leasing and starting up the mill, have decided not to make the venture. They claim that the expense of getting raw material and the heavy cost of fuel for steam power, coupled with the disadvantage of location in the matter of freight lines, handicap the concern to such an extent that it cannot be run on a paying basis. The mill was built by A. J. Whiteman on the foundation of the old Whiteman paper mill at a cost, with machinery complete, of about $75,000, and was an unfortunate investment, having been a losing concern from the start. The property passed into the hands of a receiver and was sold by order of the court last fall. The Flower City Bank, of Rochester, having a claim of nearly $25,000 against the concern, bid it in and at present owns the property. The machinery is in perfect order and will probably be taken out and sold and the building converted to some other use.

The High Falls Sulphite Pulp and Mining Company has secured an option on 2 acres of land, at $50 an acre, in the vicinity of Jerusalem Corners, N. Y., where it proposes to tap the Rome, Watertown and Ogdensburg Railroad with a switch. The Corners is slightly over 2 miles from the mill and by loading there instead of at Canton half the cost of hauling will be saved. Should the switch eventually be extended to the mill the saving would be much larger. The cost of hauling is a large item in the bill of expenses. The full capacity of the mill is to be 15 tons of dry pulp a day.

WESTERN STATES.

The Columbia Straw Paper Company has started up its mill at Lyndon, Ill., which has been shut down for a long time.

Newton W. Taylor and the Cleveland Paper Company, Cleveland, Ohio, have demurred to the petition recently filed against them by Mary R. Morrill. In the petition Mr. Taylor was charged with a mismanagement of the interests of the plaintiff in connection with the Cleveland Paper Company. The demurrer states that the several causes of action on the part of the plaintiff are improperly joined, and that the petition fails to set up sufficient facts to constitute a cause of action. In their brief in support of their demurrer the defendants both state that the petition is defective in that there are no allegations in it showing that the plaintiff as a stockholder had made an effort to have the Cleveland Paper Company institute the action instead of bringing it herself. They insist that the action is of such a nature that the paper company alone has the right to sue.

A paper mill is being talked of at Spokane, Wash.

The American Paper Pulley Company, Indianapolis, Ind., has shipped eighteen large paper wheels to Japan for use in an electric light and street car plant.

Preparations are being made to start the mill of the American Straw Board Company at Ellsworth, Ind., early in the fall. Charles Cliff has been awarded the contract for making eight new boilers for the mill to replace the smaller ones now in the mill.

The paper mill at Chillicothe, Ill., has been rented by Eastern parties for six months and will be started up.

The mill of the Muncie Pulp Company, Muncie, Ind., was closed down last week for repairs and improvements.

SOUTHERN STATES.

A factory for the manufacture of fibre from palmetto and pineapple plants and sisal grass will be started at White City (Ankona P. O.), Fla.

The paper mill at Oak Cliff, Tex., which had been shut down for two weeks, undergoing repairs, has again started up.

CANADA.

An effort is to be made to induce the Dominion Paper Compony, whose mill at Kingsey Falls, Que., was burned on May 9, to rebuilt at Richmond; but the Richmond *Times* says that "there seems to be a well founded fear that the mills will not be rebuilt."

The pulp mill on the St. Anne River, Que., which was swept away by the flood, as reported two weeks ago, was not that of J. Ford & Co., known as the Glenford Mill. The structure destroyed was Gorrie's Pulp Mill, 6 miles lower down the river, and which, with the water power in a fall of about 175 feet is reported to have been wiped out of existence.

Obituary.

THOMAS C. LATTO.

This popular Scottish poet and general newspaper writer, who has been a resident of the United States since 1851, died at his home in Brooklyn, N. Y., on Saturday evening, May 12. Thomas C. Latto was born seventy-six years ago in Scotland, and received a liberal education at St. Andrew's University. Afterward removing to Edinburgh he entered a law office, intending in time to practice before the Scotch courts. Literature had more attraction for him than law, and as several of his poems in local publications attracted wide attention his future prospects as a lawyer were thereby impaired. He became one of the group of littérateurs that contributed to *Blackwood's Magazine* in its palmy days, and helped make it famous. Prof. John Wilson was one of his warmest friends, and the late Hew Ainslie, of Louisville, the author of "The Ingleside;" the Ettrick Shepherd, Lord Macaulay, Lord Jeffrey, Sidney Smith, the late Lord Neaves, Henry Glassford Bell and Sheriff Allison, author of the ponderous "History of Europe," were among his admirers and most congenial associates.

For a time Mr. Latto acted as private secretary to Professor Aytoun, author of "Lays of the Scottish Cavaliers," and in that capacity, and by the strength of his own writings, became one of the best known literary men in Scotland. In 1847 he published his first volume of poems, "The Minister's Kailyard." It was well received by the press and reviews in Great Britain, while some of its pieces, notably "The Kiss Ahint the Door" and "When We Were at the Schule" have long been given a place among the favorite poems of Scotland.

In America he edited the *Scottish-American Journal*, of New York, and afterward held positions on the *Times* and other Brooklyn papers. In 1892 he published in Scotland a volume containing a number of his most recent poems on Scottish and American subjects, and several translations from the Danish. He was especially fond of Norse poetry, and spent many hours in its study and translation. His latest literary work was the editing of the poems of his old friend, Hew Ainslie, of Louisville, which he prefaced with a well written and interesting memoir.

Mr. Latto spent his later life in retirement, and surrounded by his books and family he often used to say that his closing years were his happiest. While as enthusiastic about his native land, he was none the less patriotic as an American citizen, and although he took no active part in politics, he watched the trend of municipal and national affairs with the keenest interest.

His death leaves William Lyle, the potter-poet (formerly of Rochester, N. Y., but now of Woodbridge, N. J.), the most prominent Scotch verse writer in the United States.

EDWARD BRIGHT, D. D.

Rev. Dr. Edward Bright, the well-known editor of the *Examiner*, and a Baptist clergyman of prominence in the United States, died at his residence, No. 170 West Fifty-eighth street, New York city, on Thursday afternoon, 17th inst. Dr. Bright had attained his eighty-sixth year. He was born in England, but came during his boyhood to America with his father, who settled at Utica, N. Y. Entering a printing office in that town, young Bright learned the trade, afterward establishing the book and publishing firm of Bennett & Bright. When he decided to leave a moderately successful business for the ministry he became pastor of the Baptist Church at Homer, N. Y. He remained there two or three years and then accepted the post of foreign secretary of the American Baptist Missionary Union, whose headquarters were in Boston. He came to New York in 1855 and purchased the *Register*, a Baptist weekly newspaper, the name of which he changed to the *Examiner*.

Dr. Bright from the time of his entering the ministry was identified with the interests of the Baptist denomination throughout the Union. He was for many years a member of the board of trustees of Rochester University and for some time president of that body. He was also a trustee of Vassar College and held prominent positions on other denominational boards and committees. He was twice married; the first time to Adeline Osborn, of Homer, N. Y., by whom he had four children—three daughters and a son, the latter Osborn E. Bright, having been well known as a lawyer in this city. His second wife, who died a few years ago, was Anna Leslie Reid, of Rochester, N. Y., by whom he had two daughters and a son.

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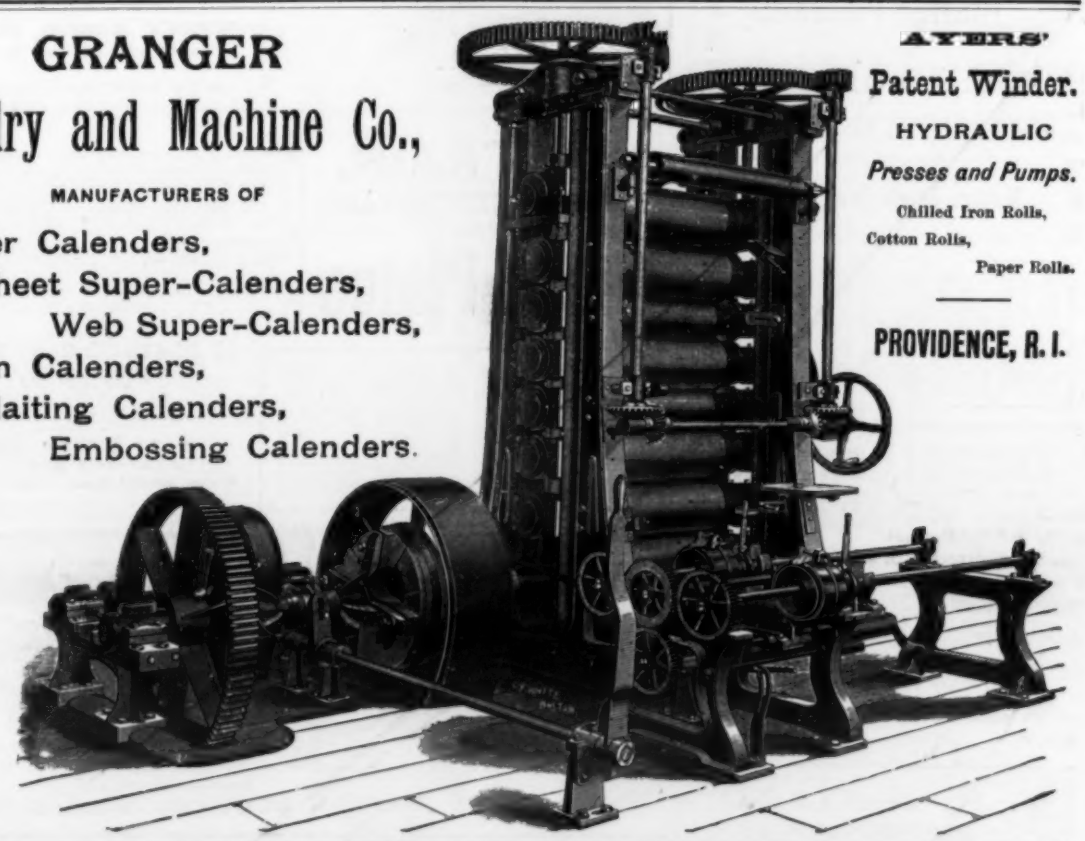

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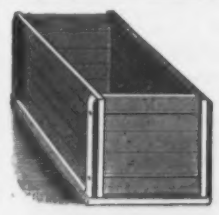

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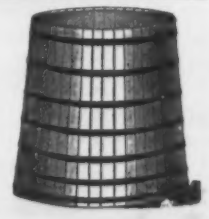


Electro-Chemistry in the Paper Mill.

Second Paper—Electro-Chemical Laws.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By James F. Hobart.

In composing or decomposing chloride of sodium or other substances either by electrical or chemical means, we must first reduce the mass to the smallest divisions possible. That is, we must go down to the atom. This means something which cannot be cut, and it is generally believed that material atoms are absolutely unalterable in size, shape, weight and density; that they can neither be cut, scratched, flattened nor distorted; and that they are unaffected in size, density or shape by any known physical force, either heat, cold, electricity or light.

The atom then is like the little cube with many of which the mosaic floor is built. By combining many kinds of the cubes into various shapes, the pleasing figures and groupings are formed; but none of the "atom cubes" are to be cut or changed in shape, they are to be combined in different ways; that is all. In like manner, in electro-chemistry, we confine our work to the atoms, for if we can combine successfully two atoms to our satisfaction, the combination of millions of atoms or tons of matter is only a matter of time and multiplication.

The exact size of an atom has probably never been definitely determined, but we can gain some idea of the size of one by thinking how small would be the smallest quantity of air which can be imagined. It would be infinitesimal, yet after the bit of air had been divided and subdivided to the utmost it would not even then be an atom, but a molecule. This is because air is composed of two elements, oxygen and nitrogen. Thus the smallest conceivable particle of air would be a molecule, which in turn could be divided again into two atoms, one of nitrogen, the other of oxygen.

Some idea of the size of atoms has been given by Sir William Thomson, who figures that the smallest visible organic particle—$\frac{1}{1000}$ of a millimetre in diameter—contains about 30,000,000 atoms, or a 5 cent nickel, which is about 2 centimetres in diameter and has an area of 3.1416 square centimetres, would permit "standing room" for upwards of 19,200,000,000 atoms.

In the electrolysis of salt we have to deal with just two of these little atoms, one of soda, the other of chlorine; but all atoms do not have the same weight. Hydrogen is the lightest substance among the 70 known elements; therefore the weight of an atom of hydrogen is called 1, and the weights of all other elements are considered in relation to or in comparison with that standard.

An atom of chlorine (Cl) is 35.4 times as heavy as an atom of hydrogen; hence the atomic weight of hydrogen is 1, of chlorine 35.4. The atomic weight of sodium (Na) is 39.1 (one atom is 39.1 times as heavy as an atom of hydrogen), therefore the weight of a molecule of chloride of sodium (NaCl) one atom of each of the two elements, is 35.4 + 39.1 = 74.5. The value of this system of atomic weights, is to determine the proportion by weight of the elements in a substance; thus, in NaCl 1,000 parts would contain 1,000 × 35.4 ÷ 74.5 = 475.17 parts Cl, and 1,000 × 39.1 ÷ 74.5 = 524.83 parts Na.

It has been observed that the atoms of some elements required more or less of other atoms to effect a perfect combination. And again, sometimes different atoms will combine in different proportions with the atoms of other elements. For instance: in water, —H_2O, two atoms of hydrogen are required to combine with one of oxygen.

One atom of oxygen can also combine with, in some instances, one atom from each of two other elements. As in hypochlorosis acid, HClO, when one atom of oxygen holds one of hydrogen and one of chlorine. This property of holding a certain number of atoms is called valency, and, as stated above, it means the worth in value of the atom in the number of hydrogen atoms which it can displace, or decompose, in other compounds, therefore the valency of hydrogen is 1, the value of oxygen 2.

There is also another property of the atoms of each element which must be known in order to study electro-chemistry, and that is: The combining weight or chemical equivalent is equal to the atomic weight divided by the valency; thus oxygen has an atomic weight of 15.96, but its valency is 2; therefore the combining weight is 7.98.

Still another point to be covered is the electro-chemical equivalent. Faraday's law as extended by Becquerel, shows that the electro-equivalent of an element is proportional to its chemical equivalent which is equal to its combining weight. In the first paper it was stated that the electro-chemical equivalent of hydrogen was .000010384. This means that such a quantity of hydrogen would be evolved in one second by one ampere of current. The coulomb is one ampere per second, hence the electro equivalent of hydrogen means that .000010384 grams of hydrogen will be released on electrolyzed per coulomb of electricity.

By a little calculation we find that it will require 96,302 coulombs to liberate 1 grain, and it can also be determined that 0.0378 grammes per ampere hour will be liberated. To apply this to the electrolysis of sodium chloride we must find the electro-chemical equivalent of sodium, also of chlorine, &c. This may be done by comparing the chemical equivalent of the element with that of hydrogen. For instance, the chemical equivalent of sodium (Na) is 22.99 or that number of times greater than hydrogen, then its electro-chemical equivalent will be 22.99 × .000010384 = .00023873.

This metal will require 4188.80 coulombs per gram, and is deposited at the rate of 0.85.942 grams per ampere hour. To electrolyze 1 pound of sodium chloride (453.6 grams) would require a quantity of current, which is determined as follows: Chloride of sodium (NaCl), as about stated, contains: $\frac{39.1}{74.5}$ parts of sodium, and 39.1 × 453.6 ÷ 74.5 = 238.07 grams of sodium; 238.07 × 4188.8 = 997127.6 coulombs. To do this work in one hour would require a current of 997127.6 ÷ 3600 = 276.9 amperes. The voltage required being very low, probably not over 1.5 or 2 volts, neglecting resistance of apparatus, which may be considerable, the power required to recover the caustic soda in 1 pound of salt would be 276.9 amperes × 2 volts = 553.8 watts, or $\frac{554}{746}$ = .742 horse power. If the resistance of the apparatus called for an increase of pressure to 4 volts, the horse power absorbed would be 2 × .742 = 1.484, or a little less than one and one-half horse power per pound of salt treated per hour.

A pound of pure caustic soda (NaOH), *i. e.*, 100 per cent., ought to be worth about 4 cents. It contains Na = 22.99; H = 1 and O = 7.98; then its worth is 22.99 + 1. + 7.98 = 30.97, and $\frac{22.99}{30.97}$ parts are sodium. Therefore, from the 238.07 grams of sodium there can be made 238.07 ÷ 22.99 × 30.97 = 320.7 grams, or a little more than three-quarters of a pound of pure caustic soda per pound of salt used, the other elements in the soda, H_1 and O, being supplied from electrolysis of the water (H_2O), in which the elements are dissolved and conveyed to the electrolyzer.

A pound of salt, worth 1 cent or less, made into caustic worth 3 cents by the expenditure of three-fourths of a horse power for one hour is not a good showing, when electricity, at the rate of 1 horse power per year, ten hours per day, 300 days per year, costs $100, making the cost for current to do the above work 2½ cents per hour. It can, however, be figured another way: 276.9 amperes for one hour equals 276.9 ampere hours. From electric light companies' data it has been found that by an average taken from sixty-five plants the average watt-hours per pound of coal was 91.7, therefore it will require about 3 pounds of coal to electrolyze 1 pound of salt into about three-quarters of a pound of caustic, and a large quantity of chlorine, as yet undetermined.

There should be no difficulty in obtaining 150 or even 175 watt-hours from a pound of coal, as some of these tests yielded over 200. Taking 150 watt-hours per pound of coal as an average, the coal required to treat one pound of salt is 150 ÷ 276.9 = .54 hour per pound of coal, or 1 ÷ .54 = 1.8 pound of coal per hour, per pound of salt.

A certain quantity of chlorine can be obtained from a pound of salt, and, provided none is lost by being absorbed, there should be obtained from it by electrolysis, 214.5 grams of chlorine gas, which at 3.167 grams per litre, gives about 68 litres, or 25 cubic feet of gas.

A word of caution is hardly necessary to paper mill men regarding the danger of inhaling chlorine gas. It attacks the membranes lining the throat and nose, causing irritation and inflammation. The effect is much like that of a heavy cold in the head. If inhaled in concentrated form as it comes from the electrolyzer it will cause death. It must be diluted with a great deal of air before it can be inhaled without dangerous results. In case chlorine gas is accidentally inhaled, at once pour some alcohol upon a handkerchief or sponge and inhale the vapor. Ammonia will do as well, or even better, but the vapor of stronger ammonia, NH_3, is too harsh to be inhaled, and a bottle containing 1 part ammonia to 5 or 6 parts of water should always be kept handy where chlorine gas is likely to be let loose. The vapor may be inhaled directly from the bottle, or from a cloth or sponge.

If we pass 4 parts of chlorine gas, 4Cl, into 2 parts of slaked lime, $2Ca(OH)_2$, the result will be 1 part of bleaching powder, $Ca(ClO)_2 + Ca\ Clc$ and 2 parts water, $2H_2O$. In order to ascertain how much bleach can be made from 68 litres of electrically liberated chlorine, we must first find the weight of each element in the compound. The reaction is as follows: $2Ca(OH)_2 + 4Cl = Ca(ClO)_2 + CaCl_2 + 2H_2O$.

From the quantities of the elements and their combining atomic weights the following table is deduced:

Element.	Combining Weight.	Number of Parts.	Total Weight.	Per cent. of each.
Ca	39.91	2	79.82	27.6062
O	15.96	4	63.84	22.0792
H	1.	4	4.	1.3834
Cl	35.37	4	141 48	48.9312
Total.....			289.14	100.

This demonstrates that nearly 50 per cent. of the total amount must be chlorine, which is to be added to the lime. From the 1 pound of salt electrolyzed there were obtained, as stated above, 214.5 grams of chlorine (Cl), which, entering as 48.9312 per cent., would convert 214.5 ÷ 48.931 × 100 = 438.3 grams of slaked lime, CaO_2H_2, into chloride of lime or bleaching powder. This is pretty nearly equal to 4 parts of lime to 2 of chlorine, as stated above, but a certain amount of water is formed during the union of the lime and chlorine.

To ascertain the amount of this the annexed table has been prepared, which gives the elements as they occur in the formula after the reaction, viz.:

Element.	Combining Weight.	Number of Parts.	Total Weight.	Per cent. of each.
Ca	39.91	1	39.91	13.8081
Cl	35.37	2	70.74	24.4656
O	15.96	2	31.92	11.0396
Ca	39.91	1	39.91	13.8081
Cl	35.37	2	70.74	24.4656
H	1.	4	4.	01.3834
O	15.96	2	31.92	11.0396
Total.....			289.14	100.

The hydrogen and oxygen combine to form water, which forms 13.964 per cent. of the whole weight after combination. There were 438.3 grams of lime and 214.5 grams of chlorine, giving 652.8 grams of bleaching powder; removing 13.9 per cent. of this by evaporation, to get rid of the water, and there are left 562 grams of dry chloride of lime, just about 1.23 pounds, or a pound and a quarter.

The value then of a pound of salt after electrolysis is as follows:

Three-fourths pound pure caustic soda....cents.	3
One and one-fourth pounds chloride of lime....	3
Total.....	6

To secure this, there has been consumed:

One pound of salt..... cent.	1
About one pound of lime.....	0.4
1.8 pound coal.....	0.36
Total.....	1.76
Balance.....	4.24

From which are to be taken the cost of labor, interest on plant, &c. There seems to be quite a margin for the electrolysis salt in paper making.

In calculating the quantity of caustic soda formed from a pound of coal it was shown that it contained 238.07 grams of sodium. The other elements (H and O), to the amount of 89.64 grams, were drawn from the electrolysis of water in which the sodium chloride was dissolved. There is also a quantity of hydrogen liberated at the kathode with the soda, and may help to form the caustic soda.

Indeed, it seems from the reaction which takes place here as if, by the introduction of a little extra oxygen, the escaping hydrogen might be all combined into caustic soda, and quite a saving made thereby, as well as increasing the electrical efficiency by preventing polarization, which is due to the gathering of bubbles of hydrogen on the surface of the kathode. The reaction indicated is as follows: $Na + H_2O = NaHO + H$.

Now by adding another atom of oxygen twice the quantity of sodium can be combined, and twice the amount of caustic formed, besides getting rid of the hydrogen as stated, thus: $2Na + H_2O + O = 2\ NaHO$.

Here is a "pointer" for the electrolysis man to work upon.

(To be continued.)

Rustless Iron.

The Bertrand process for coating iron to keep it free from rusting is based upon the fact that, if a thin adherent film of another metal is formed on wrought or cast iron, and the iron heated to 1,000° C., on exposure to a current of an oxidizing gas, the oxygen penetrates through the film and combines with the iron forming the magnetic oxide. This process continues indefinitely, provided the temperature is kept at 1,000°. The method adopted by Bertrand is to cleanse the article and dip it in a bath of sulphophenate of copper and tin. The coating of copper and tin having formed, the article is immediately washed and dried in sawdust. The dry article is put into a furnace, and, at the end of fifteen to thirty minutes a film of one-tenth to one-fifth millimetre thickness will have formed. —*Iron and Industries.*

Steam Boilers and Treatment.

Tin of pure quality is the most reliable metal for fusible plugs, because its nature is not impaired by use in a boiler, as is the case with fusible alloys. It melts at 446° Fahr.

There are numerous alloys suitable for fusible plugs, the composition and melting points of a few of which are as follows:

Fusible alloy composed of thirteen parts of tin and four of lead melts at 360° Fahr.

Fusible alloy composed of eight parts of tin and eleven of lead melts at 400° Fahr.

Fusible alloy composed of eight parts of tin and seventeen of lead melts at 450° Fahr.

Fusible alloy composed of eight parts of tin and thirty-three of lead melts at 500° Fahr.

Fusible alloy composed of four parts of tin and forty-eight of lead melts at 550° Fahr.

The alloy should be employed which melts at a temperature corresponding to that of steam of the pressure to which the boiler is limited, or a little higher pressure than the working pressure. The fusible plug is then a protection against over pressure, as well as against injury from shortness of water, so long as the nature of the alloy remains unchanged.

In casting these alloys care should be taken to obtain sound castings, because if there be air holes in the metal it is liable to be blown out of its place when in use. The plugs should be frequently examined and renewed.

Lead is sometimes used for fusible plugs. It melts at 62° Fahr.

FEED PUMPS FOR STEAM BOILERS.

The capacity of the feed pumps of a steam boiler should be equal to supplying at least double the quantity of water evaporated by the boiler per hour, in order to have a margin and to enable the pump to keep down its supply of steam in case the engine is stopped for any reason unexpectedly when the fires are brisk.

The cross sectional area of the ram of a feed pump having a length of stroke equal to one and a half times the diameter of the ram may be found by this rule:

Cross sectional area of ram of feed pump in square inches.

The evaporated capacity of the boiler in pounds of water per hour × .002.

For instance, a Lancashire boiler evaporating 6,000 pounds of water per hour should have a feed pump with a ram having a cross sectional area—6,000 pounds +.002 square inches. The ram should be

$$\frac{12 \text{ square inches}}{.7854} = 4 \text{ inches}$$

diameter in round numbers, and the length of its stroke should be—4 inches diameter × 1.5 inches.

The speed of the ram of a feed pump may be 50 feet per minute, and should never exceed 100 feet per minute. Feed pumps are frequently worked at too high a speed. The efficiency of a feed pump is greater, and the wear and tear of the valves is less at a low than at a high speed.

The friction of the ram of a pump may be reduced to a minimum by the employment of metallic packing for its stuffing box.

In pumping hot water the pump should be so fixed that the water may flow into the pump by gravity, so that the pump may only have to force and not lift the water.

FEEDING STEAM BOILERS.

Feed water forced into a boiler requires time to raise it to the same temperature as that of the boiler, and if it be rapidly injected in a considerable quantity it lowers the temperature of the water in the boiler excessively and causes extravagant consumption of fuel.

The feed water should be supplied in the best manner to obtain the temperature of the water in the boiler as uniform as possible.

The supply of feed water should be regulated to the demand for steam, so as to maintain a steady water level, and it should be continuous. An intermittent feed supply lowers the temperature of the water in the boiler excessively and is prejudicial to economical evaporation and to a steady supply of steam.

The feed water should enter the boiler above the level of the furnace crowns, so that in case of grit preventing the closing of the feed valve, or of fracture of the valve box, the water may not run out of the boiler and leave the furnace crowns bare. When feed water is delivered near the bottom of internally fired boilers it interferes with the circulation and increases the quantity of dead water in that part.

The feed water is generally delivered to Cornish and Lancashire boilers through a pipe suspended from the shell and placed about 2 inches above the crowns of the furnaces and extending about one-half the length of the boiler. The last one-third of the length of the pipe is perforated for dispersing the feed water.

SUPPLEMENTARY SUPPLY OF FEED WATER FOR MARINE BOILERS.

In the process of evaporating water to steam in a steam boiler, condensing it after being exhausted from the engines, returning it to the boiler and again evaporating it, there should theoretically be no loss; but in practice there is a considerable loss from the leakage of cocks, valves, pumps, cylinder glands, safety valves and various fittings. This loss is generally made up from fresh water either carried in the vessels in the tanks or produced by evaporating sea water in an evaporator, the heating surface of which is generally composed of rows or coils of copper pipe.

The loss by leakage varies considerably, but in engines with well packed glands it may, in a general way, be assumed to average one pound of water per indicated horse power per hour. Therefore, the boilers of a set engine developing 1,000 indicated horse power will require in working 24 hours 1,000 × 1 pound of water × 24 hours = 24,000 pounds of supplementary feed water.

SOFTENING FEED WATER FOR STEAM BOILERS.

Water in a natural state always contains more or less mineral impurities, which, on heating the water to a high temperature, are rendered insoluble, and coalesce into hard incrustation on the surfaces of heated plates of boilers.

The impurities held in solution in feed water for steam boilers, which produce incrustation, are principally sulphate of lime and carbonates of lime and magnesia.

Sulphate of lime is common plaster of Paris. It may be dissolved in large quantities, being soluble to the extent of one part in from 300 to 400 parts of water.

The carbonates of lime and magnesia are almost insoluble except in the presence of carbonic acid. They can therefore be dissolved in water containing carbonic acid gas, giving rise to double carbonates, or bicarbonates of these compounds. This gas is driven off by boiling, and the lime and magnesia held in solution in the water are thrown down as insoluble deposits.

Several substances combine with carbonic acid gas and release the carbonate of lime, such as lime and caustic soda. The soluble sulphate of lime may be converted into the insoluble carbonate of lime by treatment with carbonate of soda or common washing soda.

These softening materials require to be used in definite proportions, according to the chemical composition of the water. In softening water with caustic soda it requires to be heated to a temperature of not less than 160° Fahr., and to soften water with carbonate of soda it requires to be heated to a temperature of not less than 212° Fahr.

PURIFICATION OF WATER BY HEAT.

The scale forming substances held in solution are precipitated by heating and evaporating the water. A part of the mineral matter is deposited in the form of fine powder, which forms mud or sludge, and the remainder settles on the plates of the boiler as hard scale. The temperatures at which mineral substances are precipitated vary considerably. Carbonates of lime and magnesia precipitate at a less heat than sulphate of lime and other minerals.

The precipitating temperatures are as follows:

Carbonates of lime precipitate at temperatures from 180° to 260° Fahr.

Sulphates of lime precipitate at temperatures from 303° to 430° Fahr.

Chlorides of magnesium precipitate at temperatures from 212° to 270° Fahr.

Chlorides of sodium precipitate at temperatures from 330° to 380° Fahr.

When feed water is not purified these salts are released from the water when it is heated to the above temperatures in the boiler, and are deposited on the plates and form incrustation. By heating the feed water in a separate vessel to these temperatures the deposit of the scale may be effected therein, and the introduction of scale forming impurities into the boiler may be greatly prevented.

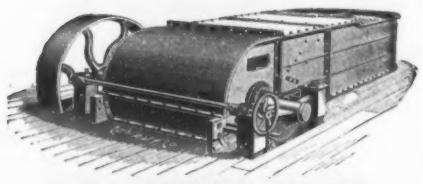
TREATMENT OF WATER IN A COLD STATE.

When water is treated in a cold state with lime and soda it requires considerable space and time, as the water must remain undisturbed for some time to effect deposit of the precipitate and permit clarification. There are numerous special processes and mechanical appliances for the treatment of water in large quantities, some of which are either too costly or cannot be conveniently applied for the treatment of small quantities of water, such as are used for feed water for steam boilers.—*Manufacturers' Gazette.*

(To be continued.)

On Friday, May 11, Secretary of the Treasury Carlisle awarded the contract for furnishing $60,000 worth of distinctive paper for Treasury use in printing bank notes and checks to Crane & Co., of Dalton, Mass., the present contractors, at the same figures as last year, 43½ cents per pound for bank note paper and 38½ cents per pound for check paper. There were no bids in opposition to Crane & Co.

THE J. H. HORNE & SONS CO., LAWRENCE, MASS.



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OUR NEW MONARCH MACHINE

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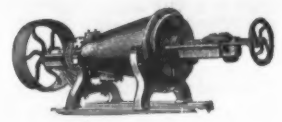

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Asbestos Pulp

and **Fibrous Talc**

FOR PAPER MAKERS.

THE GOTHAM NOISELESS SCREEN.

Screen Plates Stationary. No Accumulations to form Strings and Lumps. Runs at a Slow Speed—150 Revolutions per Minute. Variable Stroke in Blast. The Up Stroke is Double the Speed and of One-Half the Duration of the Down Stroke. A Quick, Forcible Blast Up, with a Slow Suction Down.

IT FILLS THE BILL!

First Screen made October 1, 1891, and used constantly since without repairs. Read the record for two years.

USERS:

NEW YORK—Empire Pulp Co., Black River, 1; Globe Paper Co., Brownville, 1; Union Pulp Co., Carthage, 1; Frontenac Paper Co., Dexter, 1; Leonard & Gilmore, Dexter, 1; Outterson Paper Co., Brownville, 3; Oswego Falls Pulp Co., Fulton, 3; Gouverneur Wood Pulp Co., Gouverneur, 4, two orders; Knowlton Paper Co., Watertown, 1; Ontario Paper Co., Watertown, 1; Herkimer Paper Co., Lyons Falls, 3 orders; G. H. P. Gould, Lyons Falls, 1; Gould Paper Co., Port Leyden, 1; Racquette River Pulp Co., Colton, 3; Estate of Richard Carter, Glendale, 1; Charles Wackerhagen, Canaan Four Corners, 1; Smeallie, Phillips & Co., Amsterdam, 1; O. E. Martin, Norwood, 1; Jefferson Paper Co., Black River, 1; St. Lawrence Paper Co., Dexter, 3; Payne & Blinn, Chatham, 1; M. M. Pillsbury, Napanock, 1; Victoria Paper Co., Fulton, 3 orders; Niagara Falls Paper Co., Niagara Falls, 16; Philip McGuire, Forestport, 1; Hartland Paper Co., Middleport, 1; Standard Pulp Co., Brown's Falls, 3; Fulton Paper Co., Fulton, 2, two orders; High Falls Sulphite Pulp Co., Potsdam, 4; Watertown Paper Co., Watertown, 1; Lewis, Slocum & Lefevre, Beaver Falls, 3.

NEW JERSEY—Sparks Manufacturing Co., 1.

MASSACHUSETTS—Chas. Callender, Glendale, 2; Merrimac Paper Co., Lawrence, 2; Connecticut River Paper Co., Holyoke, 1; Carew Manufacturing Co., South Hadley Falls, 1; Rice, Barton & Fales, Worcester, 3, two orders; Eaton, Dikeman & Co., Lee, 1; Bacon Paper Co., Lawrence, 1.

VERMONT—Fall Mountain Paper Co., Bellows Falls, 3 orders; Wyman, Flint & Sons, Bellows Falls, 2; National Metal Edge Box Co., Readsboro, 1.

NEW HAMPSHIRE—Glen Manufacturing Co., Berlin Falls, 3; Sugar River Paper Co., Claremont, 1; Wilder & Co., Ashland, 1.

MAINE—Umbagog Pulp Co., Livermore Falls, 2; Bangor Paper Co., Orono, 4; Jay Paper Co., Jay, 1; Rumford Falls Paper Co., Rumford Falls, 20; Hollingsworth & Whitney, Gardiner, 1.

CONNECTICUT—White & Wells, Waterbury, 1.

VIRGINIA—Columbia Paper Co., Buena Vista, 2.

INDIANA—Anderson Paper Co., Anderson, 3.

WISCONSIN—Kaukauna Paper Co., Kaukauna, 1.

MINNESOTA—St. Cloud Paper Co., St. Cloud, 1.

MICHIGAN—Alpena Sulphite Fibre Co., Alpena, 2.

TENNESSEE—Tennessee Fibre Co., Memphis, 1.

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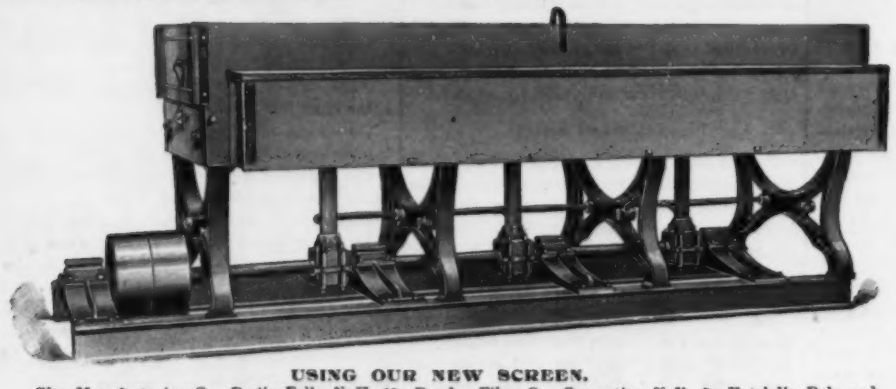

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USING OUR OLD SCREEN.

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USING OUR BARKERS.

The J. & J. Rogers Co., Ausable Forks, N. Y., 4; Katahdin Pulp and Paper Co., Lincoln, Me., 4; High Falls Sulphite Pulp and Mining Co., Potsdam, N. Y., 2; Glen Manufacturing Co., Berlin Falls, N. H., 4; Oswego Falls Pulp and Paper Co., Fulton, N. Y., 1; Treadwells Mills Pulp and Paper Co., Plattsburgh, N. Y., 3; Shenandoah Pulp Co., Harper's Ferry, W. Va., 3; Miller Bros. & Co., Glen Miller, Ont., Canada, 1; Piscataquis Falls Pulp and Paper Co., Enfield, Me., 6; Kane's Falls Pulp Co., Fort Ann, N. Y., 1; Manufacturing Investment Co., Madison, Me., 9; Umbagog Pulp Co., Livermore Falls, Me., 2; Moosehead Pulp and Paper Co., Solon, Me., 1; Bennington Falls Pulp Co., Middle Falls, N. Y., 1; Saranac River Pulp and Paper Co., Cadyville, N. Y., 1; Smith & Martin, Plattsburgh, N. Y., 1; Otis Falls Pulp Co., Livermore Falls, Me., 1; Hollingsworth & Whitney Co., Waterville, Me., 3; Gilbert & Bell, Waterford, N. Y., 1; Laurentide Pulp Co., Montreal, Canada, 1; Hudson River Pulp and Paper Co., Palmer's Falls, N. Y., 1; Battenkill Paper Co., Greenwich, N. Y., 1; Ticonderoga Pulp and Paper Co., Ticonderoga, N. Y., 1.

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SEND FOR CATALOGUE AND BLUE PRINTS.

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The Hudson River Pulp and Paper Co., Palmer's Falls, N. Y.	**48**	Chemical Paper Co., Holyoke, Mass.	2	Ohio Paper Co., Niles, Mich.	1
The Burgess Sulphite Fibre Co., Berlin Falls, N. Y.	12	Beebe & Holbrook Co., Holyoke, Mass.	2	Otis Falls Paper Co., Livermore Falls, Me.	19
Marinette and Menominee Paper Co., Marinette, Wis.	8	A. H. Hubbard Co., Norwich, Conn.	2	J. D. Mulronan, Hadley, N. Y.	2
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Wilkinson Bros. & Co., Derby, Conn.	5	The Worthy Paper Co., Mittineague, Mass.	1	Herkimer Paper Co., Herkimer, N. Y.	3
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IN 1873—twenty years ago—Carl Hofmann first published his ***TREATISE ON PAPER MAKING.*** He was then, and for some years had been, a practical paper maker in America. His experience in the trade abroad, as well as in this country, and his technical education and knowledge enabled him to be specially adapted for the work; hence "Hofmann's Treatise on Paper Making" took high rank at the start, and soon became *a* standard work on the subject throughout the world. It was published in English, German and French, and had wide sale in all three languages.

As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,300 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

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We cannot accept any order that is not accompanied by the cash.

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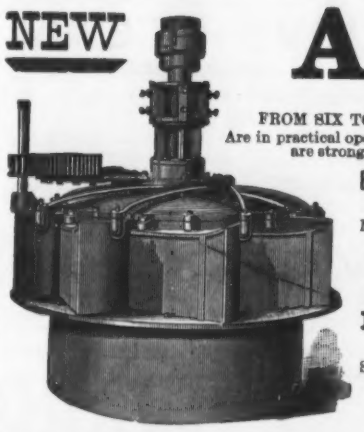

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Are in practical operation under heads from 4 to 100 feet head: are strong, durable and give high efficiency.

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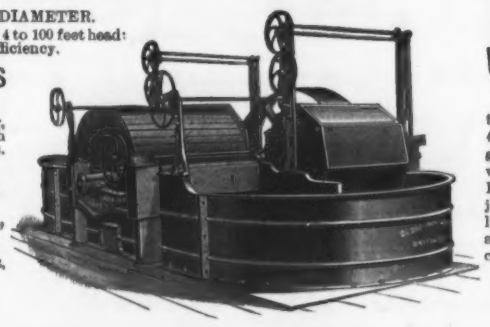

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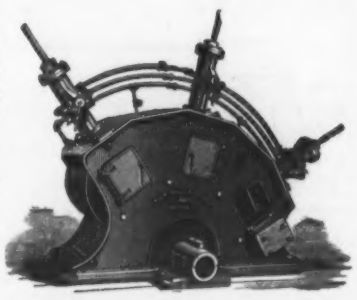

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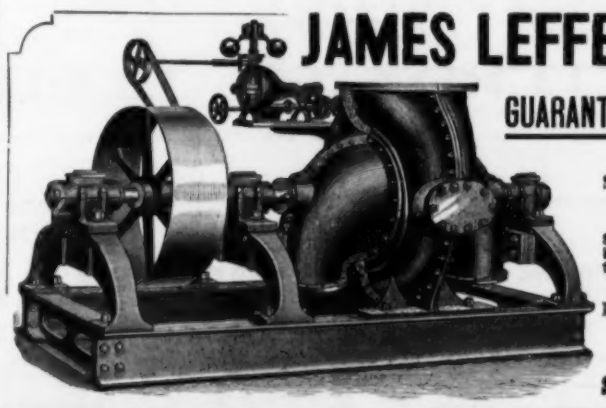

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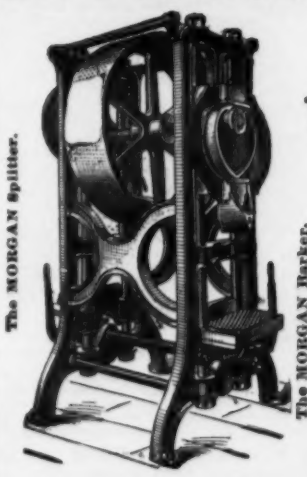

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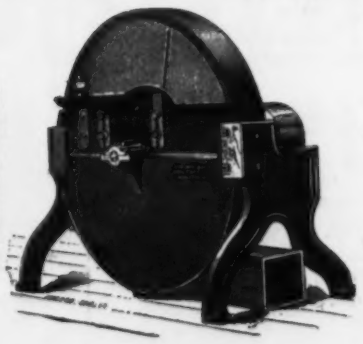

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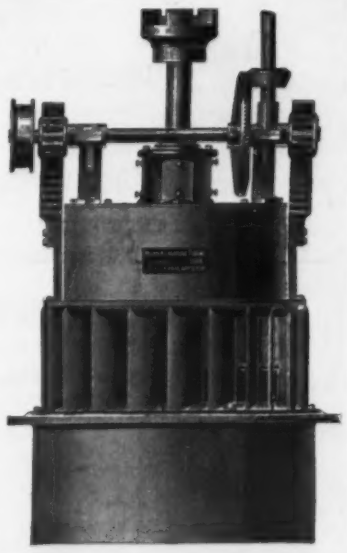

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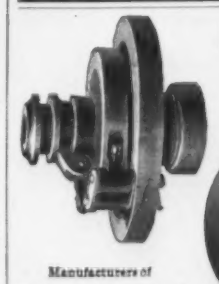

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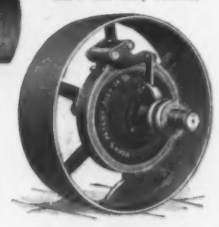
NEW HAVEN, CONN.,



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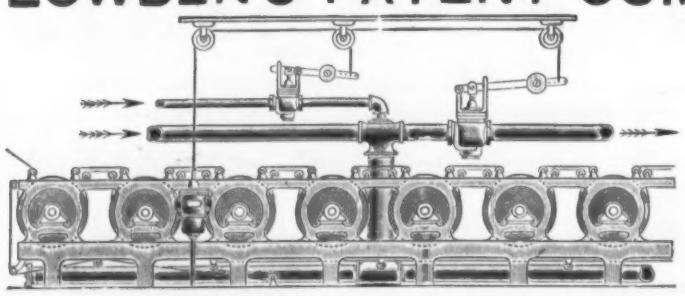

CAN be applied to paper machines where *exhaust is used or exhaust and direct steam combined, and relieving engine from back pressure* in the operation. Paper can be made with a great saving of steam; it insures uniformity in drying, freedom from water streaks and will go to the calenders in proper condition to produce a handsome finish, which are important points in paper making.

We can refer to numbers of paper makers who have been using these Regulators three to four years on their paper machines.

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Nonotuck Paper Co.,	4 "	" "
Franklin Paper Co.,	2 "	" "
Riverside Paper Co.,	3 "	" "
Lindon Paper Co.,	2 "	" "
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Mittineague Paper Co.,	2 "	" "
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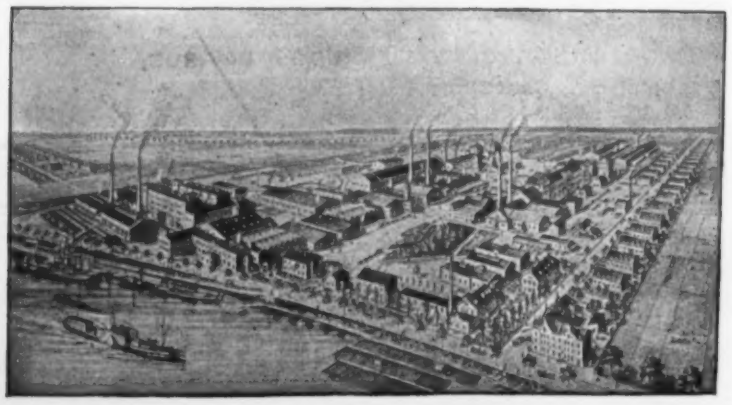

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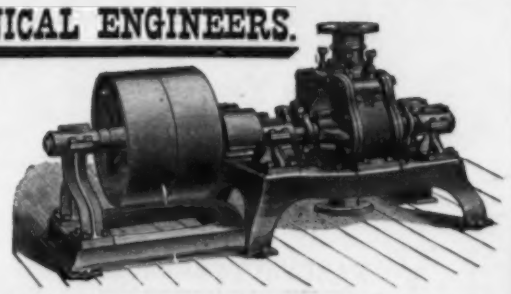

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THE BEST TURNING RAG ENGINE BUILT.

Tubs either Iron or Wood.

Double Lighters, Relief Lever, Adjustable Breast and Fall, Iron Rolls.

GENERAL PAPER MACHINERY,

DOWNINGTOWN MFG. CO.,

East Downingtown, Pa., U.S.A.

For Mining and Concentrating Works, Coal, Stone and Ore Screens, Gas and Water Works, Clay and Sand Screens, &c.

For Paper, Woolen, Oil and Flour Mills, Filters, Dryers, Strainers, Ventilators, &c.

Perforators of All Metals.

PAPER MILL WORK A SPECIALTY. Perforated Iron, Copper and Brass for Vats and Drainer Bottoms, Washers, Pulp Screens, False Bottoms, Stock Boilers, both Rotary and Stationary; Sand Traps, Button Catchers, Suction Box Covers, Shower Pipes, &c., &c. Screens and Filter Plates, Perforated Tin and Brass of all sizes. Iron, Steel, Copper, Brass and Zinc punched to any size and thickness required. CORRESPONDENCE SOLICITED. SATISFACTION GUARANTEED.

THE HARRINGTON & KING PERFORATING CO.,

MAIN OFFICE AND WORKS: 234 and 236 North Union St., CHICAGO, ILL.

EASTERN OFFICE: 284 Pearl St., cor. Beekman, NEW YORK.

Beware of Imitations.

BEST IN THE WORLD!

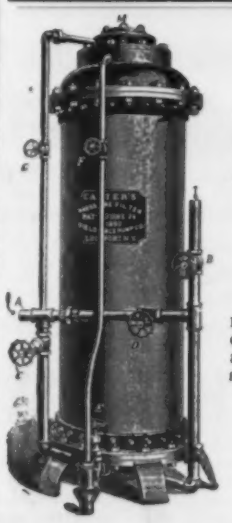
Called the STANDARD, as it is the PACKING by which others are compared.

THE IMPROVED JENKINS BROS. VALVES

Stamped with our Trade Mark

ARE GENUINE.

JENKINS BROS., 71 John St., New York, 105 Milk St., Boston, 21 North Fifth St., Philadelphia, 31 North Canal St., Chicago.



THE CARTER

Pressure Water Filter and

PURIFIER,

ESPECIALLY DESIGNED FOR PURIFYING WATER FOR

PAPER AND PULP MILLS.

Built on scientific principles, embracing all recent advancement in the purification of water. The pressure is even and equal on all parts of the filter bed. It is the only Filter having a central cylinder for the inflow of water, and the most perfect self washing Filter on the market.

CORRESPONDENCE SOLICITED.

Address, FIELD FORCE PUMP CO.,

LOCKPORT, N. Y.

"WHITE'S" NEW PATENT OSCILLATING SCREEN

PATENTED IN AMERICA PATENT No. 498,041.

LIST OF USERS.

Messrs.	Annandale & Son, Ltd.,	Polton, Midlothian
"	The Bally Paper Mills,	Calcutta
"	Caldwell & Co.,	Inverkeithing, Fife
"	The Carrongrove Paper Co., Ltd.,	Denny
"	John Collins, Ltd.,	Deany, Stirlingshire
"	R. & J. Couper,	Millholm, Glasgow
"	The Culter Mills Paper Co., Ltd.,	Aberdeen
"	Dixon, Horsburgh & Co., Ltd.,	Wells, Somerset
"	The Ford Paper Works, Ltd.,	Sunderland
"	Gillespie & Mason, Ltd.,	Newton le Willows, Lancashire
"	The Guardbridge Paper Co., Ltd.,	Guardbridge, Fife
"	Inveresk Paper Co.,	Musselburgh, Midlothian
"	Potter & Co.,	Darwen, Lancashire
"	James Stewart & Co.,	Westfield, Bathgate
"	The St. Neots Paper Mill Co., Ltd.,	St. Neots
"	W A. Sommerville & Co.,	Kevock, Lasswade
"	Thomas & Green, Ltd.,	Wooburn, Berks
"	W. Tod, Jr., & Co.,	Springfield, Midlothian
"	W. Tod & Son,	Lasswade, Midlothian
"	Jos. Town & Sons,	Keighley, Yorkshire
"	James Wrigley & Son, Ltd.,	Bury, Lancashire

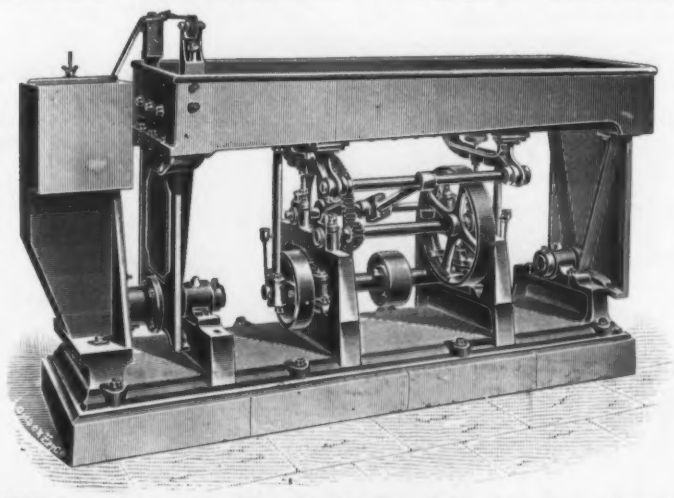
TESTIMONIALS.

Messrs. Annandale & Son, Ltd., Polton Paper Works, Midlothian, write as follows:

"We may say that we consider the Oscillating Strainer embraces all the advantages of the revolvers, with none of its disadvantages, and all the advantages of the flat bottomed, with none of its disadvantages, while it also holds qualifications essentially its own. As we had your Strainer taking through 500 lbs. per hour of **pure rag pulp** of ordinary length through 3½ cut, we think it says sufficient for its power."

Messrs. Wm. Tod, Jr., & Co., Springfield Paper Mills, Polton, write:

"We are very pleased with the Oscillating Strainer you fitted to our Presse Pâte in April last (seven months ago). It has run constantly since, passing through plates cut No. 5. Watson's gauge, about **35 tons of paper weekly**, and has given us no trouble whatever, and much cleaner stuff than before."



WE have pleasure in calling the attention of American Paper Manufacturers to the new design of Screen as illustrated above. This Screen has now been thoroughly tested on all classes of pulp, and we confidently recommend it as the best and most efficient Screen at present in the market.

A slow, oscillating motion, about twelve oscillations per minute, is imparted to the vat by a crank, and the diaphragm is driven from a crankshaft which runs at about 550 revolutions per minute, and the amount of stroke is regulated by adjustable pins.

The entire straining surface is constantly in motion, the stuff washes across the plates at each oscillation, thus effectually preventing the pulp from settling on the plates. The refused fibres are carried into channels at each side of vat and discharged by a simple arrangement of automatic plunger valves.

Our standard make of Screen has a straining surface of 7 ft. × 2 ft., and at a mill here making high class printings a Screen of this size, with plates having slits 9-1000 wide, is passing 1,000 lbs. of dry paper per hour. In mills using pure rag stuffs the Screen under above conditions is regularly passing over 600 lbs. of dry paper per hour.

All impurities are removed and a great saving is effected in the consequent cleanliness of the paper. The Screen is absolutely noiseless, the power required is nominal, and the wear and tear is reduced to a minimum.

TESTIMONIALS.

Messrs. Joseph Town & Sons, Turkey Paper Mills, Keighley, write:

"We have pleasure in saying we think your Patent Oscillating Strainer is beyond doubt the best yet produced. We have made decidedly cleaner paper with it through the same cut of plates, and as it automatically removes the dirt and knots strained out of the pulp **as they are made**, it is always practically fresh and clean for its work. Its working parts, too, are so simple as to preclude any trouble from its own working, which cannot always be said of any other Strainer. We are perfectly satisfied with it, and can most cordially recommend it."

Messrs. R. & J. Couper, Millholm Paper Mills, Glasgow, write:

"We have now had your Oscillating Strainers making all qualities and weights of **tub sized rag papers**, and are well satified with the results. We consider them a decided improvement over both flat and revolving strainers of the latest modern paper making practice. **They are in our opinion giving a cleaner result** all round, and effecting at the same time a considerable saving in fibre, which, with proper machine house supervision, ought to recoup original outlay in a comparatively short period."

Messrs. The Culter Mills Paper Co., Ltd., Aberdeen, write:

"We are pleased to tell you that your Patent Flat Oscillating Strainers, which are fitted to one of our paper machines, continue to give us every satisfaction. In our opinion this Strainer contains many improvements, passes a large quantity for the plate area, and effectually keeps back all impurities. We are able to pass through our Strainer of 7 ft. × 2 ft. **fully 500 lbs. per hour.**"

Messrs. W. A. Sommerville & Co., Kevock Paper Mills, Lasswade, write:

"Your Oscillating Strainer has been working on our Presse Pâte for more than a year, and is passing over 50 tons of esparto grass per week. The cut of the plate is 4½ (Watson's gauge). We have never had the slightest trouble with it since we started, nor have we spent a penny on its upkeep. The two additional Oscillating Strainers lately supplied to replace the revolvers on our paper making machine are also giving most satisfactory results, and we consider your Strainer is far and away **the most efficient Strainer we have ever worked.** By the oscillating motion the plates are kept quite free from dirt and stuff, and on this account the power to drive is reduced to a minimum."

Messrs James Stewart & Co., Westfield Paper Mills, Bathgate, write:

"The Oscillating Strainer which you lately supplied us with is giving every satisfaction, and our manager reports that 96 cwt. bleached esparto can with ease be passed through in twelve hours. We shall have great pleasure in recommending the Strainer to anyone who may think of going in for a similar machine."

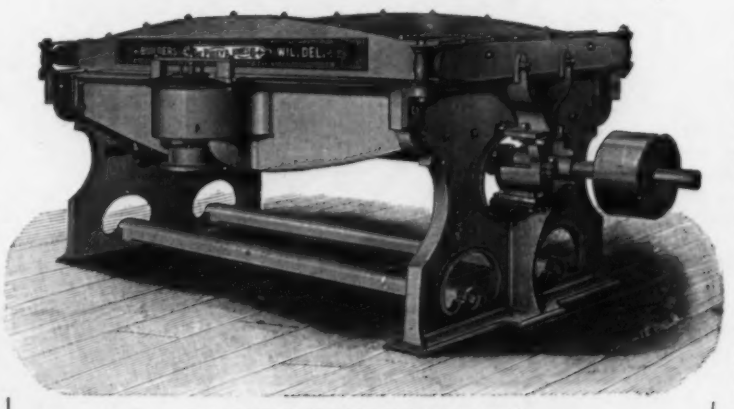
FOR FULL PARTICULARS APPLY TO THE SOLE MAKERS:

JAS. BERTRAM & SON, Ltd, Leith Walk Foundry, Edinburgh, Scotland.

PATENTED GOULD SCREEN.

PURCHASERS.

	Screens.
GEBR. HOESCH, Duren, Germany,	1
FREIBERGER PAPIERFABRIK, Weissenborn, Germany,	1
ROLLAND PAPER CO., Montreal, Canada,	1
MOSS CELLULOSE FABRIK, Moss, Norway,	1
McDOUGALL & CO., Melbourne, Australia,	1
TORONTO PAPER MFG. CO., Cornwall, Ont., Canada,	1
MARITIME CHEMICAL PULP CO., Chatham, N. B., Canada,	1
WM. BARBER & BRO., Georgetown, Ont., Canada,	1
CASTRO, FERNANDEZ & CO., Havana, Cuba,	1
J. MASHIMA, Yokohama, Japan,	1
OJI PAPER CO., Japan,	1
BERNARDINO NODARI & CO., Lugo di Vicenza, Italy	1
AUGUSTINE PAPER MILLS, Wilmington, Del.,	3
ROCKLAND PAPER MILLS, Rockland, Del.,	3
CURTIS & BRO., Newark, Del.,	1
POTOMAC PAPER CO., Cumberland, Md.,	3
W. M. SINGERLY, Elkton, Md.,	4
SUSQUEHANNA W. P. AND PAPER CO., Conowingo, Md.,	4
I. D. CARTER, Elkton, Md.,	1
IVANHOE PAPER CO., Paterson, N. J.,	1
WARREN MANUFACTURING CO., Warren Paper Mills, N. J.,	3
WALTER MOOREHOUSE, Bridgeton, N. J.,	1
H. McINNES, Bridgeport, Pa.,	1
SCHUYLKILL PAPER MILLS, Manayunk, Pa.,	1
C. S. GARRETT & SON, Philadelphia, Pa.,	2
M. & W. H. NIXON PAPER CO., Philadelphia, Pa.,	6
JOHN LANG, Philadelphia, Pa.,	2
W. C. HAMILTON & SONS, Philadelphia, Pa.,	7
J. M. WILLCOX & CO., Philadelphia, Pa.,	1
MEGARGEE PAPER MILLS, Philadelphia, Pa.,	3
ALEX. BALFOUR, Philadelphia, Pa.,	2
READING PAPER MILLS, Reading, Pa.,	1
C. L. VAN REED, Reading, Pa.,	1
YORK HAVEN PAPER CO., York Haven, Pa.,	7
WESTMORELAND PAPER CO., West Newton, Pa.,	4
JAS. SYMINGTON & CO., Lancaster, Pa.,	1
H. F. WATSON, Erie, Pa.,	4
MORRISON & CASS, Tyrone, Pa.,	1
MOUNT HOLLY PAPER CO., Mt. Holly Springs, Pa.,	1
D. M. BARE & CO., Roaring Springs, Pa.,	2
J. HOWARD LEWIS, Swarthmore, Pa.,	3
P. H. GLATFELTER, Spring Forge, Pa.,	4
AMERICAN WOOD PAPER CO., Royersford, Pa.,	1
PENNSYLVANIA PULP AND PAPER CO., Lock Haven, Pa.,	4
CLARION PULP AND PAPER CO., Johnsonburg, Pa.,	4
FRONTENAC PAPER CO., Limerick, N. Y.,	1
ONTARIO PAPER CO., Brownville, N. Y.,	4
J. B. SHEFFIELD & SON, Saugerties, N. Y.,	1
GLENS FALLS PAPER MILL CO., Glens Falls, N. Y.,	7
TICONDEROGA PULP AND PAPER CO., Ticonderoga, N. Y.,	1
LAKE GEORGE PULP AND PAPER CO., Ticonderoga, N. Y.,	2
GLENS FALLS PULP CO., Ticonderoga, N. Y.,	2
HUDSON RIVER PULP AND PAPER CO., Palmer's Falls, N. Y.,	9
PETTEBONE PAPER CO., Niagara Falls, N. Y.,	2
H. POWELL RAMSDELL, Salisbury Mills, N. Y.,	1
HERKIMER PAPER CO., Herkimer, N. Y.,	2
BARCLAY FIBRE CO., Saugerties, N. Y.,	2
KNOWLTON BROS., Watertown, N. Y.,	3
REMINGTON PAPER CO., Watertown, N. Y.,	4
WALLOOMSAC PAPER CO., Walloomsac, N. Y.,	2
STEVENS & THOMPSON, North Hoosac,	1
WHITEMAN PAPER CO., Dansville, N. Y.,	1
J. C. BEACH & BRO., Wallkill, N. Y.,	1
CLIFF PAPER CO., Niagara Falls, N. Y.,	1
F. H. RICHMOND & CO., Providence, R. I.,	1
RICHMOND PAPER CO., Providence, R. I.,	11
BROWN BROS., Comstock's Bridge, Conn.,	1
KEENEY BROS., Manchester, Conn.,	1
BRIDGEPORT PAPER CO., Bridgeport, Conn.,	3
PETER ADAMS & CO., Buckland, Conn.,	2
SOUTHFORD PAPER CO., Southford, Conn.,	2
WILKINSON BROS. & CO., Birmingham, Conn.,	4
F. R. WALKER & SON, Burnside, Conn.,	2
PAGE PAPER CO., Hardwick, Mass.,	1
CROCKER, BURBANK & CO., Wachusett, Mass.,	4



GOULD'S PATENT SCREEN.

THE PUSEY & JONES COMPANY,

WILMINGTON, DELAWARE.

THESE SCREENS have withstood the test for many years, and have been pronounced by all who have used them satisfactory in an eminent degree. About three hundred of them are now in use in this country, and the fact that there are no second-hand ones for sale indicates that all who have purchased have been pleased.

Anyone who is in doubt as to the kind or type of Screen to use can safely rely upon the judgment of parties whose names appear herewith, and feel assured they are doing what is right and best for their own interests when they follow the example set them by these well-known leaders in their trade.

Anyone who refers to the List of Purchasers will be impressed with the fact that it comprises a large proportion of the most able and successful Paper Manufacturers. It will also be found from the List that the *GOULD SCREEN* is successfully used in almost every variety of Paper Mills, including those where the finest Writing, Lithograph and Ledger Papers are made, as well as in those where the coarsest Wrapping, Strawboard, and all intermediate grades are manufactured.

It is an acknowledged fact that a Screen that is pre-eminently valuable on one kind of stock will be so on others also. And, judging from the testimonials of purchasers, the *GOULD SCREEN* will give better results than any other in mills where Sulphite or Chemical Pulp is made and no Ground Wood Pulp plant should be without them.

PURCHASERS.

	Screens.
BEEBE & HOLBROOK CO., Holyoke, Mass.,	2
G. W. WHEELWRIGHT PAPER CO., Boston, Mass.,	1
WILDER & CO., Boston, Mass.,	1
HOLLINGSWORTH & WHITNEY CO., Boston, Mass.,	2
HOLLINGSWORTH & VOSE, Boston, Mass.,	2
SYMS & DUDLEY PAPER CO., Holyoke, Mass.,	4
NONOTUCK PAPER CO., Holyoke, Mass.,	3
WINONA PAPER CO., Holyoke, Mass.,	2
PARSONS PAPER CO., Holyoke, Mass.,	5
GEORGE E. DICKINSON PAPER CO., Holyoke, Mass.,	8
EXCELSIOR PAPER CO., Holyoke, Mass.,	1
DICKINSON & CLARK PAPER CO., Holyoke, Mass.,	1
CROCKER MANUFACTURING CO., Holyoke, Mass.,	1
J. & W. JOLLY, Holyoke, Mass.,	1
WHITING PAPER CO., Holyoke, Mass.,	1
FITCHBURG PAPER CO., Fitchburg, Mass.,	3
FRANKLIN WYMAN, Westminster, Mass.,	1
AGAWAM PAPER CO., West Springfield, Mass.,	2
COLLINS MANUFACTURING CO., North Wilbraham, Mass.,	1
FAIRCHILD PAPER CO., Pepperell, Mass.,	2
F. W. BIRD & SON, Winslow's, Mass.,	2
HURLBUT PAPER CO., South Lee, Mass.,	2
CRANE BROS., Westfield, Mass.,	1
E. & S. MAY PAPER CO., Lee, Mass.,	1
THOS. RICE PAPER CO., Newton Falls, Mass.,	1
FAIRFIELD PAPER CO., Fairfield, Mass.,	1
CAREW MANUFACTURING CO., South Hadley Falls, Mass.,	1
RIVERSIDE PAPER CO., Holyoke, Mass.,	2
TILESTON & HOLLINGSWORTH, Mattapan, Mass.,	3
VALLEY PAPER CO., Holyoke, Mass.,	2
HAMPSHIRE PAPER CO., South Hadley Falls, Mass.,	1
BYRON WESTON, Dalton, Mass.,	2
CONTOOCOOK VALLEY PAPER CO., W. Henniker, N. H.,	1
TRAIN, SMITH & CO., Bristol, N. H.,	1
LAKE SUNAPEE WOOD PULP CO., Sunapee, N. H.,	2
OLCOTT FALLS CO., Olcott, Vt.,	1
MOORE, ARMS & THOMPSON, Bellows Falls, Vt.,	1
ALBEMARLE PAPER MFG. CO., Richmond, Va.,	1
RICHMOND PAPER MFG. CO., Richmond, Va.,	1
WINCHESTER PAPER MFG. CO., Winchester, Va.,	1
POTOMAC PULP CO., Falling Waters, W. Va.,	3
SHENANDOAH PULP CO., Harper's Ferry, W. Va.,	6
BOWDOIN PAPER MFG. CO., Brunswick, Me.,	3
OTIS FALLS PULP CO., Portland, Me.,	2
ALVIN RECORD, Livermore Falls, Me.,	3
SHAWMUT FIBRE CO., Somerset Falls, Me.,	5
WARDLOW-THOMAS PAPER CO., Middletown, Ohio,	2
TYTUS PAPER CO., Middletown, Ohio,	4
MIAMI VALLEY PAPER CO., Miamisburg, Ohio,	1
G. H. FRIEND PAPER CO., W. Carrollton, Ohio,	1
C. L. HAWES CO., Dayton, Ohio,	2
EAGLE PAPER CO., Franklin, Ohio,	1
THREE RIVERS PAPER CO., Three Rivers, Mich.,	1
BARDEEN PAPER CO., Otsego, Mich.,	2
KALAMAZOO PAPER CO., Kalamazoo, Mich.,	1
ALPENA SULPHITE FIBRE CO., Alpena, Mich.,	4
DETROIT SULPHITE FIBRE CO., Detroit, Mich.,	2
JACKSON PAPER CO., Jackson, Mich.,	1
PENINSULAR PAPER CO., Ypsilanti,	1
J. R. BEARDSLEY, Elkhart, Ind.,	1
DIAMOND MATCH CO., Wabash, Ind.,	6
KAUKAUNA PAPER CO., Kaukauna, Wis.,	1
KIMBERLY & CLARK CO., Neenah, Wis.,	1
S. P. TAYLOR & CO., San Francisco, Cal.,	1
W. H. CROSSMAN & BRO., Santos, Brazil,	2
St. LAWRENCE PAPER CO., Limerick, N. Y.,	1
TAGGARTS PAPER CO., Felt's Mills, N. Y.,	4
FORT ORANGE PAPER CO., Castleton, N. Y.,	1
S. A. RUDOLPH, Manayunk, Pa.,	1
F. W. McDOWELL, Manayunk, Pa.,	1
J. M. WILLCOX & CO., Philadelphia, Pa.,	1
C. S. GARRETT & SON, Elkton, Md.,	1
BUENA VISTA PAPER MFG. CO., Buena Vista, Va.,	1
PIEDMONT PULP AND PAPER CO., Piedmont, W. Va.,	8
WILKINSON PAPER CO., Banning, Ga.,	4

The Rag Sorter.

In their comparisons of the time, wage and other regulations under which the industries of various nations are conducted, statisticians have neglected to a greater or less extent a very important branch of the textile labor. We refer to the work of the rag sorter.

The rag business of the world is in the aggregate of enormous proportions, though it may be said right here that woolen rags are more extensively used in the textile trade than the cotton or other fabrics. The latter find a ready market among paper manufacturers. But we shall consider rags of all descriptions, as they will be found in every collection from which the sorter shall select his or her woolens.

In the United States the rag dealer sets apart a portion of his establishment for the exclusive use of the sorters. The apartment provided is essentially commodious, for rags are light and consequently bulky, and as a general thing well lighted and ventilated. Rag sorters the world over are of both sexes, irrespective of color, race or age. It is nothing uncommon to see in the sorting rooms extreme youth and old age, each from an opposite quarter of the universe, industriously working side by side. The work is arduous only in that it is confining. It sometimes happens, though not frequently, perhaps, that the sorters carry their work into their homes. This may be the case where a mother with the spirit of economy may desire to earn an extra dollar or two, and yet must be at the side of her babe; or where the sorter is too infirm to go and come, yet is sufficiently vigorous to attend to the work, provided it be close at hand.

The hours of labor and the wages paid in this country vary according in the first instance, if the work is done in the dealers' warehouse, to the disposition of the dealer, and in the second to the proficiency of the sorter. If the work is done at home the pay is regulated by the amount of work accomplished. The sorter must apply attention closely to business to become an expert, able to correctly make the distinctions between fabrics and detect at the lightest touch, the possible existence of foreign material in a piece of woolen cloth. Those to whom is due this degree of expert receive the highest pay for their labor. When the sorting is conducted at the establishment of the dealer a regular time scale is followed, eight to ten hours constituting a day's work. A good sorter will earn, on an average, $7 to $8 a week.

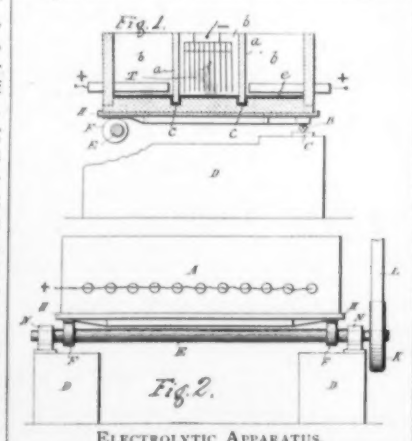
There is in this country a firm which deals in nothing but new clip woolen rags, that is tailor's clippings and rags from the cutting tables of the clothing manufactories. This firm is composed of two brothers, who conduct each an establishmeat, one in Boston, the other in Philadelphia. They employ as sorters principally young women, who work from 8 o'clock in the morning until 5 o'clock in the afternoon, with an hour's respite at mid-day. The work is very clean, as the cloth is in as pure condition as when taken from the loom, and the girls who do the sorting are of the better class. It is a fact that they earn each week from $5, $6 and $7 up to $12 $13 and even $14 for their week's work. Hosts of their sister mortals who would shudder at even the title "rag-sorter" will stand all day behind a dry-goods counter, in an atmosphere tainted by the mingling of a hundred breaths, and be satisfied with one-third to one-half that amount, seldom more.

The "rag sorters" of England and other foreign countries are another type, surrounded by altogether different circumstances. In England they rarely earn over a shilling (25 cents) per day, and that day of unlimited length. It is a very ordinary occurrence to find up in the Batley District of Yorkshire whole families, after a steady day's employment, continuing by the flare of a rushlight far into the night for money enough to keep up the relations between body and soul. The wide gulf between 82 per day of eight hours and 25 cents per day of double that length furnishes good material for the thinker.—*Manufacturers' Gazette.*

Electrolytic Apparatus.

This invention relates to that class of electrolytic apparatus in which it is necessary that a certain portion of the substance or material contained therein should be moved from cell to cell, the invention being particularly applicable for carrying out the process of forming an amalgam or alloy particularly between mercury and sodium, the latter being formed by deposition from a solution of chloride of sodium which, after being deposited in the mercury, is moved with the mercury to a second compartment, where it is separated, forming caustic soda.

The invention is intended to produce simple mechanical means for securing the



ELECTROLYTIC APPARATUS.

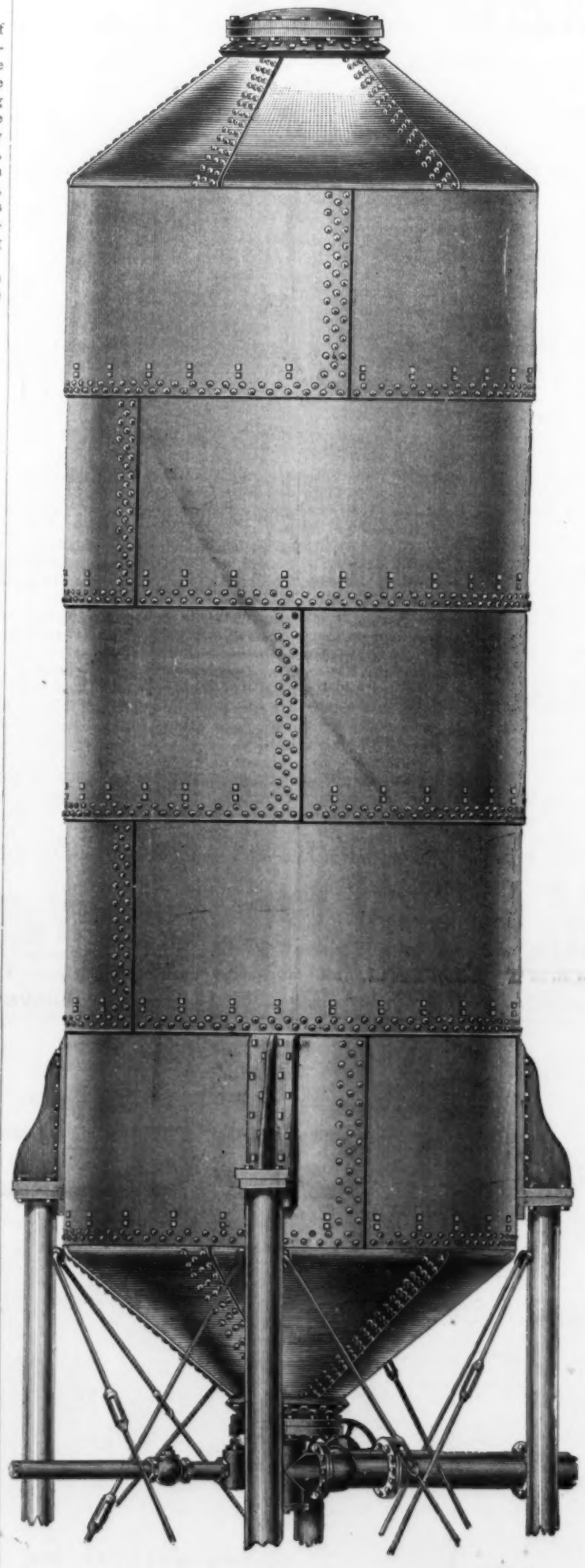
circulation of mercury or amalgam, and for this purpose it consists in so mounting the electrolytic cells that they shall be capable of being rocked or tilted by mechanical means at regular intervals, the result being that the mercury or other material at the bottom of one compartment will be caused to flow to the compartment next in order, whence it will be returned after being subjected to suitable electric action.

Figure 1 represents a side sectional elevation and Fig. 2 a front view of the apparatus.

A represents an electrolytic apparatus having three compartments, its rear end being supported on adjustable pivot points or knife edges, B, by means of which the level of the cell may be adjusted. These pivot points or knife edges rest on metal plates, C, which in turn rest on the usual supporting walls or frame D. The front of the apparatus is supported on eccentrics, F, secured to the shaft E, and bearing against the metal plate H or upon the bottom of the cell, as the case may be.

The shaft is supported and driven by any suitable means, such as by the bearings N N, belt L and pulley K. The speed of rotation of the shaft and the shape of the eccentrics will necessarily vary, depending upon the tilt which it is desired to give to the cell and the rapidity with which such tilting action is to be repeated. When carrying out the process it is judged that with a depth of mercury or amalgam of about an eighth of an inch it will only be necessary to raise and lower the front of the cell about an eighth of an inch above and below the horizontal plane, and this result may be attained with an eccentric having a pitch of a fourth of an inch; the speed of the revolving shaft being adjusted to allow time during which the mercury or amalgam may flow and come to a level between each tilting action.

Partitions *a* divide the cell into the several compartments *b*, and fit into grooves *c*, formed in the bottom of the cell, so as to leave spaces beneath. In the bottom of the cell is a layer of mercury, *e*, while contained or arranged within, preferably the central compartment *b*, is the electrode T, having the electrical connections indicated by the usual plus and minus signs or symbols.



The Bearded Lady's Answer.

"Where is the bearded lady?"

Asked the manager. "It's time for the show to begin."

"He went out to vote," replied the ossified man.

It's no use to try to appear as one thing and be another.

The lady's beard won't be inducement enough when voting time comes.

A poor Digester may deceive well enough, but voting time will come.

Then it means discovery and humiliation and expense, and perhaps failure.

It may win to barrel apple stems up and rosy cheeks out, for appearance sake;

But a Digester has work to do—years of it—decades of it.

FRIEND-STEBBINS MFG. CO.,
WEST CARROLLTON, OHIO.

ALDRICH SYSTEM OF DRYING PAPER.

USING LIVE OR EXHAUST STEAM.

86-INCH MACHINE, 35,789 LBS. 24 HOURS.

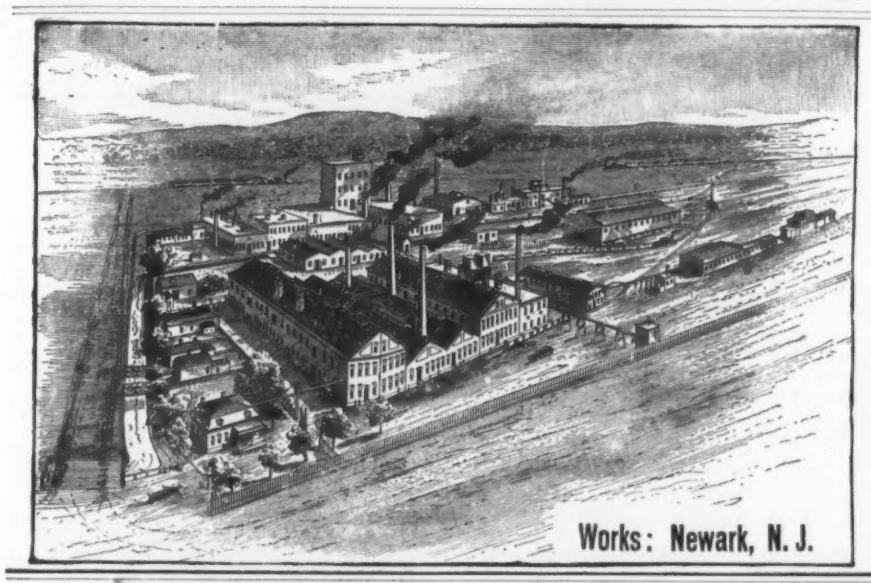
PAPER IS

Dried Uniformly.
Dried at Low Temperature if desired.
Dried Fast as Formed on Wet End.
Dried with Minimum Steam.
Dried with Practically no Vapor from the Machine.

Applied to Any Machine; Large or Small Dryers; High or Low Speed, with Guaranteed Increased Production.

WRITE FOR ESTIMATES.

ROSCOE H. ALDRICH, Consulting and Contracting Engineer, 42 Builders' Exchange, Buffalo, N. Y.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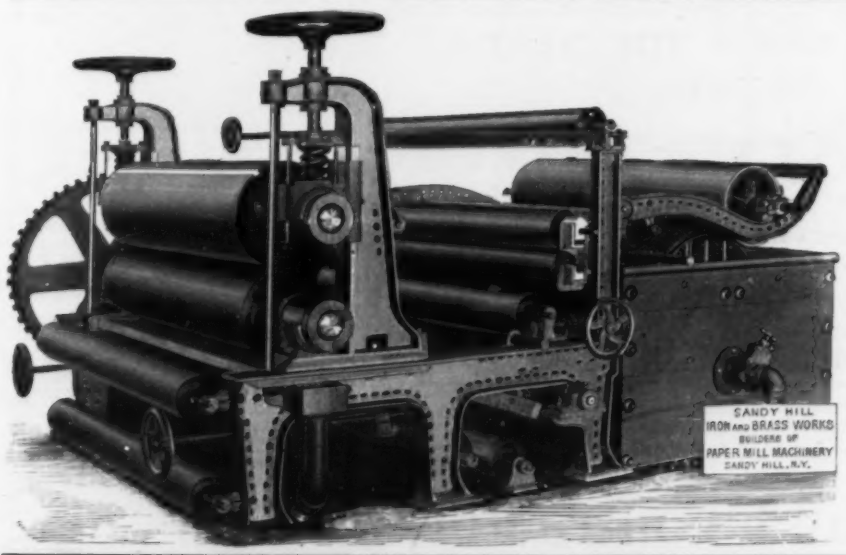

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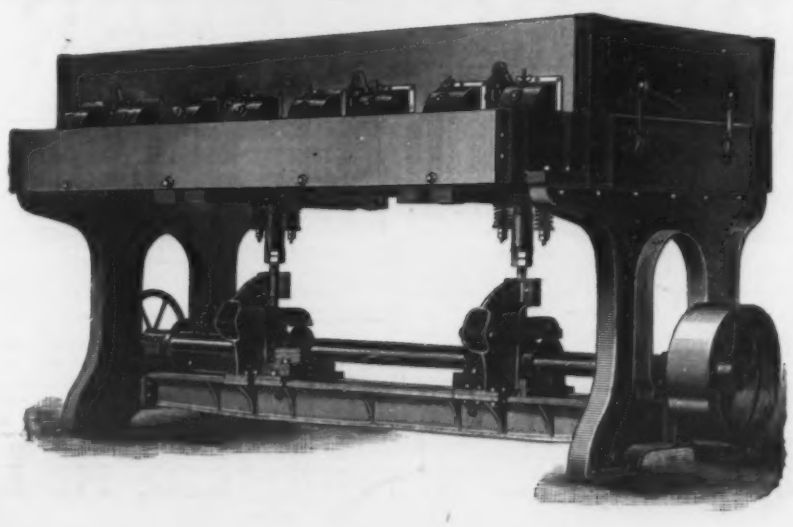

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Indifference to Boiler Firing and Management.*

By D. Ashworth.

Observations extending over a period of a quarter of a century in a practical and professional way have presented opportunities to note, in the greater number of manufacturing establishments, a continuous decline in the grade of service of those in the positions of firemen and boiler room managers, this corps of operatives seeming, at least, to have remained in statu quo. The evil has become so glaring and the results so palpably fraught with disaster, destruction and waste as to warrant an effort to call the attention of those who desire to progress to the false and inconsistent position they occupy by permitting such a narrow policy in management, so widely at variance with true economy, ignoring directly that the better intelligence renders the more valuable and hence more profitable service.

It goes without saying that during the past ten years the concentration of efforts by scientists and eminent mechanics looking to the more perfect development of the steam engine in its various types has produced results which challenge the admiration of the most critical in this line of thought.

Within the same period, from every source, there have been a multitude of features in the form of designs and novel application of boilers, all converging to the important factors of increased economy, efficiency and safety. In the engine sphere, condensing, compound and triple expansion engines, with and without jackets; in brief, seemingly all the necessary refinements have received and are now receiving close attention. In the boiler domain there has been also the evolution from the plain cylinder type to tubular, and from that through the multifarious forms of water tubes, each striving for a superior degree of excellence. Combining these forces—viz., the boiler and the engine—the amount of research and practical application that have been and are being applied for efficiency and economy are such as to be incalculable. A retrospect of the past, viewed in the light of present results, shows that these efforts have been of an exceedingly fruitful character.

The development has carried with it the imperative advancement of those in charge of engine management to such an extent as to create almost anew this body of men. Such an intellectual advancement in the department of mechanics, we believe, is without precedent, and in every sense challenges universal admiration from every quarter. Notwithstanding these favorable features, we are constrained to say that all this is somewhat like the play of "Hamlet" with Hamlet left out, or, in other words, we are really defective at the very threshold of this field, by reason of relegating the firing of boilers to the most ignorant of operatives; or, to put it in a plain way, there seems to be an almost unanimous idea that anyone who can shovel and throw fuel is good enough for a fireman. Close observation and contact for a period of years with numerous plants of varied character increase the conviction upon this point. Recognizing, as we all do, that the furnace of the boiler is the prime feature and great initial point from which is the source of power, does it not properly follow that if economy and efficiency are deserving of efforts in the advanced stages, as has already been pointed out, this is the very point that should be treated with every consideration of intelligence Should not the fuel, furnace and boiler receive the thoughtful attention that the engine receives from the careful engineer? I think this will be accepted by everyone interested in advanced ideas. No one, I think, will question the fact of the importance of the initial point of the boiler and its furnace, and that upon its mismanagement the efforts of refinement are rendered, in many cases, completely void. It would seem so simple that argument would be unnecessary, were it not that, on every hand, the matter is entirely ignored, resulting in waste and destruction. We would ask, Are not the efforts of the best furnace designers completely set at naught often by reason of the manner in which they are operated? Is it not a glaring fact that in all large cities where smoke abatement has been and is being attempted, the great stumbling block is the low grade of intelligence and indifference of the operatives.

In looking upon this subject from a mechanical and engineering standpoint, we are fully alive to all the requirements to give complete combustion and thorough distribution of heat units; proportion of grate area and openings, proper amount of air, conduction of the heated gases, are all carefully considered. When all is completed we have had the wonderful spectacle of these conditions being turned over to the simple treatment of ram-jam shoveling and slice bar operations. I claim that the fireman should know, at least, the elements of combustion, the importance of proper management of fires to produce the greatest results with the least expenditure of fuel. The intelligent engineer keeps this constantly in view as to steam economy; the valves, &c., receive his unremitting attention, unless he should be a mere starter and stopper—for such a so-called engineer can be properly placed upon the same plane as the fireman that shovels without intelligence or judgment.

Now, it may be said that this is being greatly overcome by the application of mechanical stokers, a point that is frequently (and, I believe, without thinking) claimed by those interested in placing stokers. This is a great mistake, well known by those conducting tests, the results always being superior with the greater intelligence of the operator of the machine.

This deplorable and absurd state of affairs is doubly aggravated by, not simply indifference, but actual encouragement, based upon the idea that anyone can shovel and throw in; or perhaps it is the idea of—they put it in the slot and we do the rest. Does it ever occur to these proprietors or the superintendents of manufacturing establishments that, while they are straining at gnats in the refinements of every application in the various departments looking to economic results, right upon the threshold they are swallowing a camel with the greatest ease?

Within the past few years in every community where cleanliness, taste and health are considered there has come forth a crying appeal to the authorities to lessen the great evil of smoke in the atmosphere. In response to this inventive genius has promptly come forward. The multitude of devices that have been perfected and put in operation furnishes ample testimony of this fact. Many of these, when properly operated, accomplish satisfactory results in smoke abatement, but no inventor has ever had the temerity to label his machine or furnace, "No skilled fireman required." Per contra, it is well known that the most intelligent fireman produces the best results; and it is also an undeniable fact that the best devices are set at naught by incompetent operating. The writer has been brought in contact with large fields of boiler practice, and in many cases, aside from other disqualifications, the firemen were unable to speak or understand a word of the English language. It may be said, as I have heard it said, that these men are not paid to think but to do. Well, they do do. They will do up a coal pile, furnace and boilers with alarming rapidity. I say alarming to those whose views are broad enough to consider the initial and important points. On the other hand, it is a lamentable fact that there are a great number of men in official positions as superintendents and proprietors of establishments, who seem to be utterly incapable, or unwilling to note the importance of the necessity for a higher grade of labor in the firing and management of boilers.

One of the most surprising features in connection with this state of affairs is the tendency of those interested in placing boilers to claim, among their numerous merits, that of less attention required than others, precisely on the old exploded idea applied to engines, "No skilled engineer required." I have now before me a letter from a boiler representative who claims that his boiler will give the utmost satisfaction with one-half the attention that others receive.

What is greatly needed at present is to lay aside the idea that anyone is good enough to fire and manage boilers. When you engage a man for your office do you not require that he shall possess some qualifications for the position? And if aptness is shown do you not show appreciation by advancement to a higher plane, the interest being mutual? Why not apply this to the selection of firemen?

There are many plants in operation where, by incompetency in this line, the steam efficiency is greatly lessened, furnaces and boilers working in neglected conditions, fuel wasted, and the community begrimed with volumes of unnecessary smoke; and in addition to these evils is that of jeopardizing lives and property. Unless this matter is considered and such action taken as will improve this corps of operatives, it would seem absurd to be continually reaching and extending into the higher refinements of steam engineering when such simple and important features are ignored at the threshold.

Under these conditions, does not the pertinent question present itself to the employer: Are we not occupying a false position by this seeming indifference? Do we not retard the development of a class of labor which by a recognition, by an appreciation that some skill and judgment are required, would be animated by the smallest spark of ambition to qualify for advanced positions? Is not this condition of affairs a gross inconsistency—nay, a mockery—in the face of the query put by those guilty of this indifference: Why can we not get better men than these? In reply to that we would state simply, it is not sought on your part. Just as long as operatives of this class are looked upon as mere shovelers, throwers of coal and carriers of water, ignorance, with all its attendant waste, destruction of property and general demoralization, will be prominent in the boiler department.

As a fitting close to this it would be proper to ask, What degree of intelligence or knowledge would qualify one to fire boilers properly?

1. That the fires should be maintained with uniformity, and that no openings, in the form of bare places, showed upon the bars to permit cold air to pass through.

2. The judgment that will enable him, by a glance at the ash pit, to know at once, to a great extent, the condition of the fires.

3. He should know something of the various fittings of the boilers, such as valves, &c., and the details of the furnaces.

4. But not least, an ambition to grasp the details, so as to qualify him for a still higher plane, which would certainly follow, provided there was judgment enough in the superior to note such details.

Sufficient, we think, has been said to convince the most obtuse mind that the indiscriminate employment of labor for this purpose is a crying evil, and that some consideration should be given to the claims here made—that simply because one can shovel and throw, it does not follow that he is qualified to fire and have charge of steam boilers.

*Read before the Engineers' Society of Western Pennsylvania.

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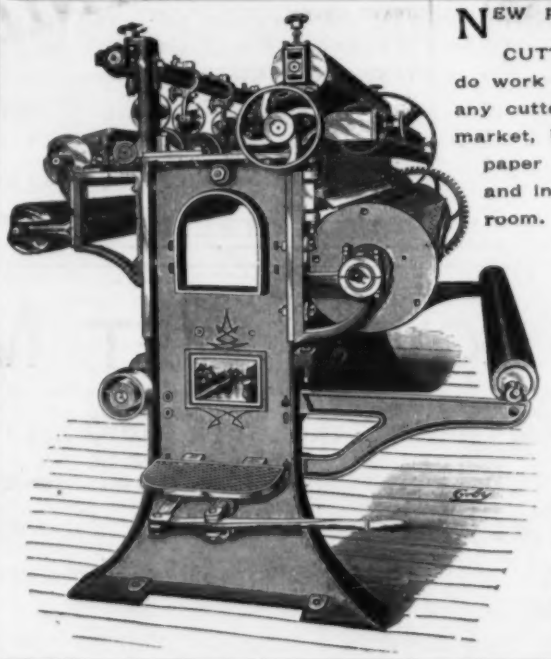

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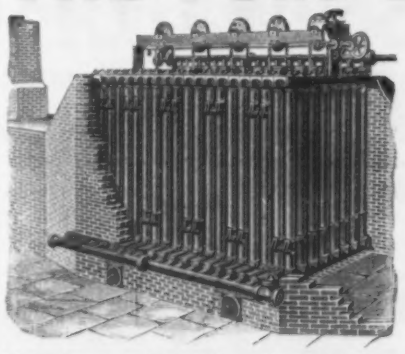

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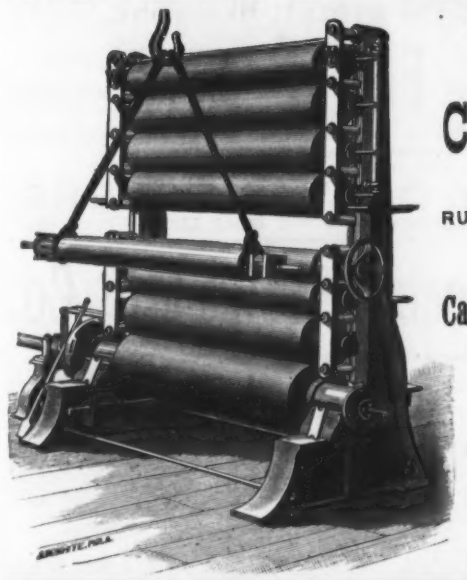

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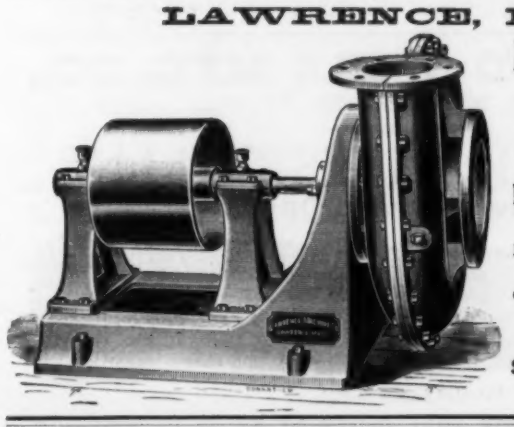

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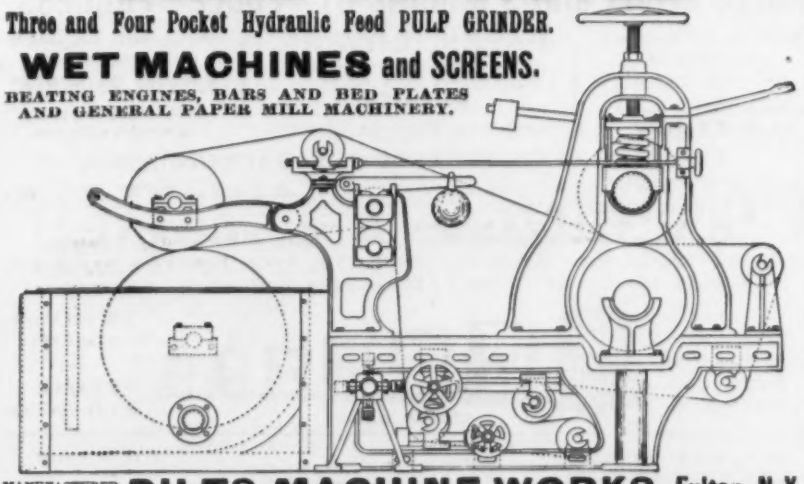

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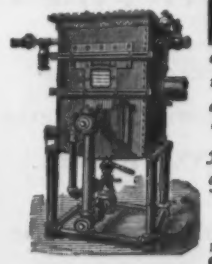

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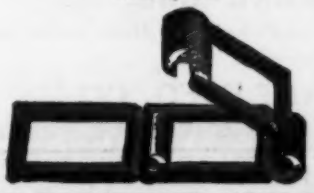

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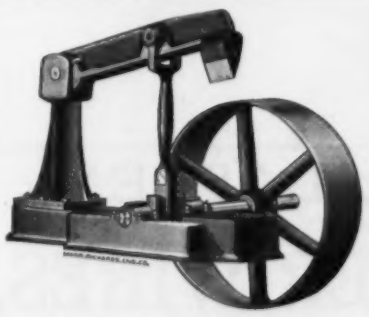

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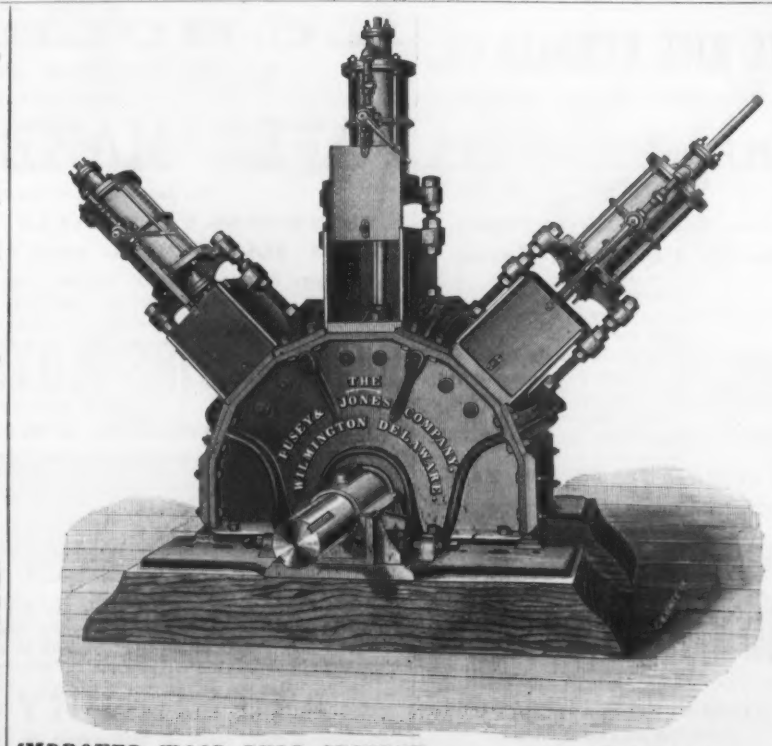

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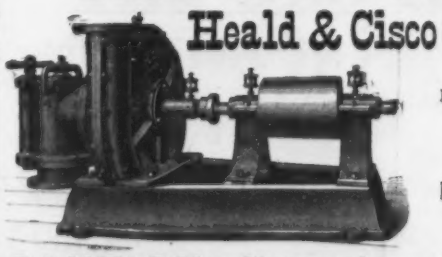

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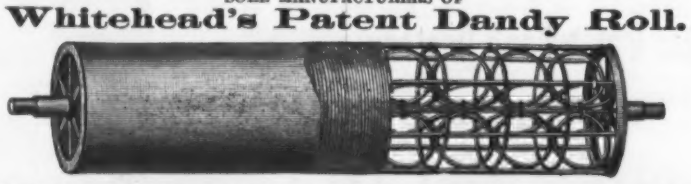

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